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Signature Scars of the Long War

"Americans should not expect one battle, but a lengthy campaign, unlike any other we have ever seen."¹

"The United States is a nation engaged in what will be a long war."²

Since the fall of 2001, the U.S. military has continuously conducted ground combat operations in south-west Asia. More than a decade of sustained war fighting in Afghanistan and Iraq is the longest such period in U.S. military history; the experience justifies its description as "the long war."^{1,2}

Many U.S. casualties in Afghanistan and Iraq have resulted from rocket and mortar attacks, detonations of land mines, ambushes of convoys and patrols, and sniper attacks. In turn, many war veterans suffer from the clinical sequelae of traumatic brain injuries (TBI) and post-traumatic stress disorder (PTSD). TBI and PTSD are now often referred to as the "signature wounds" of the Iraq/Afghanistan wars.³

In addition to TBI and PTSD, however, diverse other physical and psychological disorders have been associated with repeated or lengthy war time deployments. These conditions include disorders of the neck, back (e.g., intervertebral disc disorders), and other joints; hearing loss, alcohol and drug abuse, organic sleep disorders, headache, chronic sinusitis, skin conditions, and various "ill-defined" conditions.⁴⁻⁶ While the "excess" health care burden during the war period overall has been estimated,⁴ changes, if any, in the types and amounts of health care provided to military members as the war has proceeded have not been assessed.

Each April since 1998, the *MSMR* has summarized the numbers, rates, and natures of hospitalizations and ambulatory visits and the magnitudes and causes of "health care burdens" among the men and women in the active components of the U.S. Armed Services during the preceding calendar year. For this report, we reviewed all April *MSMRs* since 2003 to assess rates and trends of hospitalizations and ambulatory

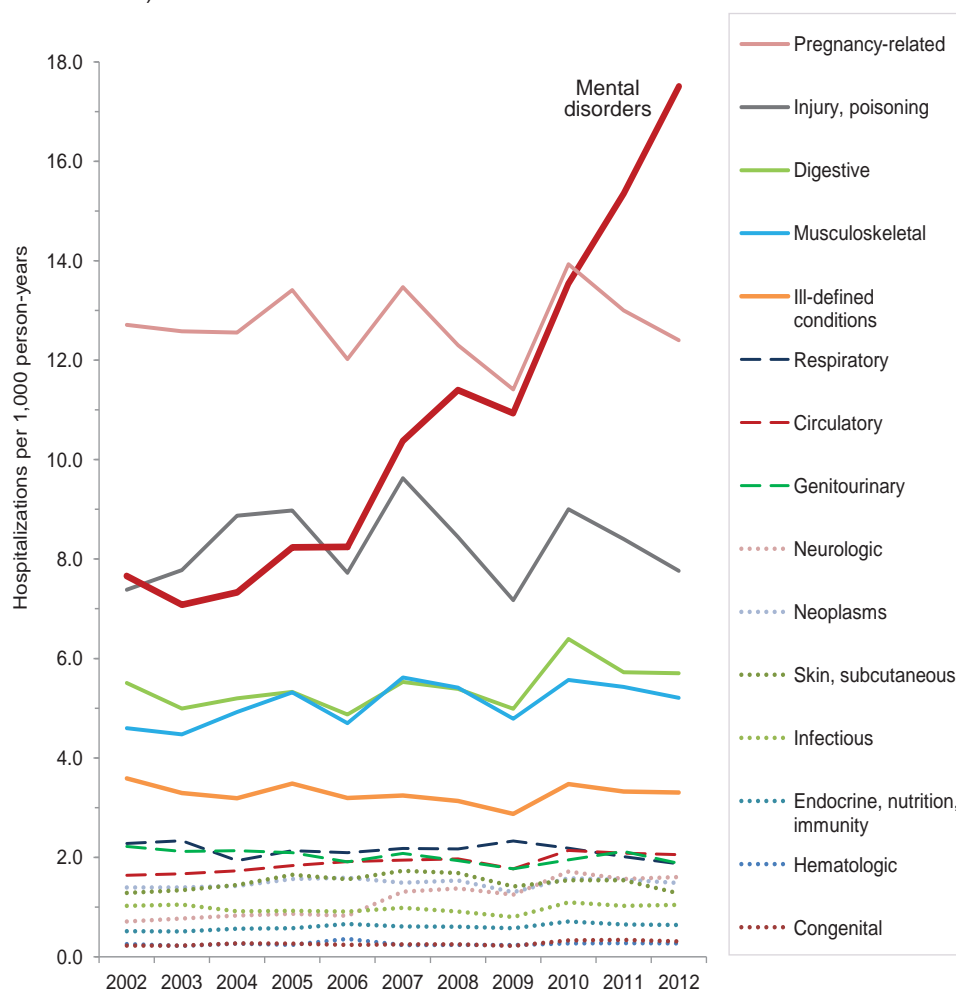
visits in each of 16 categories of illnesses and injuries (per the International Classification of Diseases, 9th Revision) throughout the period of the Afghanistan/Iraq wars.

RESULTS

For 15 of the 16 illness/injury categories of interest, annual hospitalization rates

remained fairly stable, with some year-to-year variability, throughout the 11-year war period. However, for mental disorders, annual hospitalization rates were fairly stable from 2002 through 2006 and then sharply increased from 2006 through 2012. As such, the hospitalization rate for mental disorders was approximately 8 percent higher in 2006 than 2002 but more than twice as high in 2012 as 2006 (**Figure 1**).

FIGURE 1. Annual hospitalization rates (unadjusted) by major illness categories (per ICD-9-CM), active component, U.S. Armed Forces, 2002-2012 (data abstracted from April issues of the *MSMR*)



For 12 of the 16 illness/injury categories, annual rates of ambulatory visits remained fairly stable throughout the war period. However, for musculoskeletal disorders and mental disorders, rates of ambulatory visits were fairly stable from 2002 through 2005 and then sharply increased from 2005 through 2012. Of note in this regard, there were more than 2.4-times as many ambulatory visits for “other/unspecified disorders of joints” and “other/unspecified disorders of the back” in 2012 as 2005 (data not shown).

For illnesses and injuries without specific diagnoses (i.e., “ill-defined conditions”), ambulatory visit rates slightly declined from 2002 through 2005 and then monotonically increased from 2005 through 2012; and for neurologic and sensory disorders (which includes organic sleep disorders), ambulatory visit rates were stable from 2002 through 2008 and then monotonically increased from 2008 through 2012 (Figure 2).

EDITORIAL COMMENT

During the first 11-years of the Iraq/Afghanistan wars, “mental disorders” was the only illness/injury category for which hospitalization rates markedly increased. Moreover, musculoskeletal disorders, mental disorders, neurologic/sensory disorders, and ill-defined conditions were the only illness/injury categories (of 16) for which ambulatory visit rates markedly increased. The findings are not surprising. For example, a recent *MSMR* report estimated that during the first 129 months of the Iraq/Afghanistan war period (relative to pre-war experience), mental disorders accounted for 63 percent of all excess hospitalizations; and mental disorders, musculoskeletal disorders, and ill-defined conditions accounted for 69 percent of all excess ambulatory visits.⁴

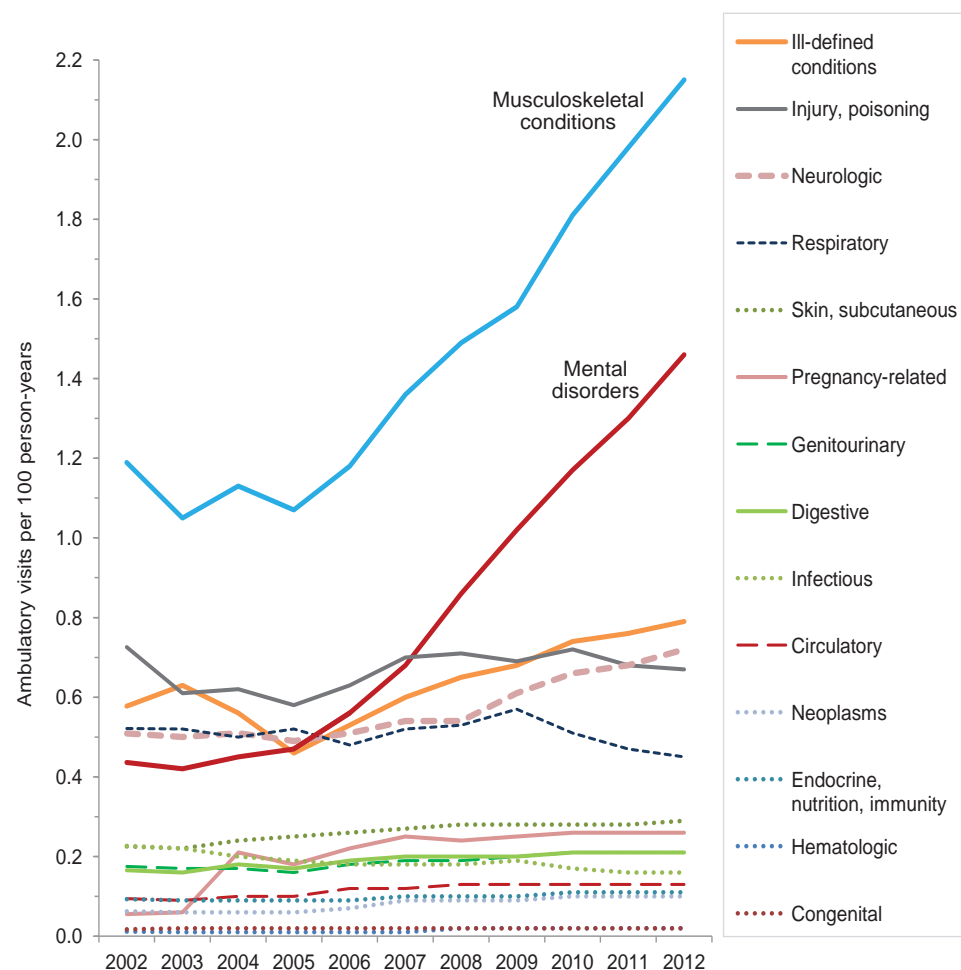
There are several unanticipated findings of this report. Most notably, the report documents that no major categories of illnesses or injuries accounted for marked increases in rates of hospitalizations or ambulatory visits among U.S. military members until the fifth year (2006) of the war period.

Then, from the fifth year through the end of the surveillance period, annual rates of ambulatory visits continuously increased for mental disorders, musculoskeletal disorders, and “ill-defined conditions.” From the sixth year (2007) through the end of the surveillance period, annual rates of hospitalizations sharply increased for mental disorders. And from the eighth year (2009) through the end of the surveillance period, annual rates of ambulatory visits continuously increased for neurologic/sensory disorders. In each case, once annual rates began to increase, they continued to increase through the rest of the period. As such, for each illness/injury category with increasing hospitalization or ambulatory visit rates during the period, the highest annual rate overall was in 2012.

The findings of this report have several potentially important implications. First, there may be dose-response relationships between cumulative exposure of a military force to war fighting and the natures and magnitudes of their health care needs. A previous *MSMR* report documented that, among female deployment veterans, the durations of specific deployments were stronger correlates of post-deployment morbidity (from selected conditions) than either the number of prior deployments or the durations of dwell times between deployments.⁶ Such dose response relationships between deployment duration and post deployment morbidity at the individual level may apply to some extent at the military force level.

Second, if there are cumulative health effects of continuous exposure of a military

FIGURE 2. Annual ambulatory visit rates (unadjusted) by major illness categories (per ICD-9-CM), active component, U.S. Armed Forces, 2002-2012 (data abstracted from April issues of the *MSMR*)



force to the stresses of war fighting, the first clinical manifestations – e.g., mental disorders, musculoskeletal disorders, sleep disorders, ill-defined conditions -- may not be apparent until several years after war fighting begins. If so, the short and long term health care costs associated with “short wars” would be much less than those associated with long wars.

Third, in a military force that is continuously engaged in war fighting, the health care burdens associated with conditions most sensitive to prolonged exposures to war-related stresses may increase as long as war fighting continues.

Finally, some clinical expressions of the health impacts of prolonged exposures to war fighting may be chronic and resistant to treatment.⁷ If so, clinical manifestations of the war may persist among many war veterans long after war fighting ends.

The findings of this report and interpretations of its results should be assessed with consideration of several major limitations. For example, the report documents annual rates of hospitalizations and ambulatory visits among individuals who were active component members – but not necessarily war veterans – at various times of the surveillance period. Because the surveillance population was continuously changing and deployment experience was not accounted for, changes in the natures and rates of medical encounters over the period may be unrelated to the duration of war fighting or the nature of war fighting experiences. Also, because the report documents rates of medical encounters rather than cumulative incidence (“attack”) rates, trends may reflect changes in the clinical management of various conditions (e.g., evaluation, treatment, rehabilitation) rather than changes in the numbers of individuals affected by the conditions.

In addition, increases in rates of medical encounters for some conditions may

reflect increases in clinical capacities to assess, diagnose, and treat the conditions (e.g., PTSD, sleep disorders); decreases in social stigmas associated with or barriers to seeking care for the conditions (e.g., anxiety, depression, suicide ideation); more complete, more accurate, or other changes in reporting of various conditions in administrative medical records (the source of data for the report); and so on. In particular, it should be noted that rates of encounters for the category of neurologic/sensory disorders increased greatly following the introduction into that category of new ICD-9 codes for “organic sleep disorders” (in 2005), “pain, not elsewhere classified” (2006), and “other headache syndromes” (2008).⁸ As such, increases in rates of reported medical encounters for some conditions may not accurately reflect increases in incidence rates of the conditions themselves.

Finally, the report summarizes the experience of U.S. active component members overall during the period of the Afghanistan/Iraq wars; as such, the findings are not generalizable to U.S. reserve component members, members of other nations’ military forces, specific demographic or military subgroups of the U.S. military, or other war periods or locations.

In conclusion, this report documents continuous increases in health care burdens associated with certain psychological and physical (but not combat trauma-related) disorders beginning approximately five years after the start of the Afghanistan/Iraq wars. To the extent that some adverse health effects of prolonged periods of war fighting may be persistent and resistant to treatment, medical care may be needed by large numbers of war veterans long after war fighting ends. If so, someday persistence of anxiety, depression, sleep disorders, neck, back, and joint pains, headache, and various “ill-defined” conditions among

Afghanistan/Iraq war veterans may be recognized as signature scars of the long war.

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Absolute and Relative Morbidity Burdens Attributable to Various Illnesses and Injuries, U.S. Armed Forces, 2012

Perceptions of the relative “importance” of various health conditions in military populations often determine the natures, extents, and priorities for resources applied to primary, secondary, and tertiary prevention activities. These perceptions are inherently subjective, however, and may not reflect objective measures of the relationship between the conditions and their impact on health, fitness, military operational effectiveness, health care costs, and so on.

Several classification systems and morbidity measures have been developed to quantify the “public health burdens” that are attributable to various illnesses and injuries in defined populations and settings.¹ Not surprisingly, different classification systems and morbidity measures lead to different rankings of illness and injury-specific public health burdens.²

For example, in a given population and setting, the illnesses and injuries that account for the most hospitalizations are likely different from those that account for the most outpatient medical encounters, and the illnesses and injuries that account for the most medical encounters overall may differ from those that affect the most individuals, have the most debilitating or long-lasting effects, and so on.² Thus, in a given population and setting, the classification system or measure employed to quantify condition-specific morbidity burdens determines to a large extent the conclusions that may be drawn regarding the relative “importance” of various conditions – and, in turn, the resources that may be indicated to prevent or minimize their impacts.

This annual summary uses a standard disease classification system (modified for use among U.S. military members) and several health care burden measures to quantify the impacts of various illnesses and injuries among members of the U.S. Armed Forces in 2012.

METHODS

The surveillance period was 1 January to 31 December 2012. The surveillance population included all individuals who served in the active component of the U.S. Army, Navy, Air Force, Marine Corps, or Coast Guard any time during the surveillance period. For this analysis, all inpatient and outpatient medical encounters of all active component members during 2012 were summarized according to the primary (first-listed) diagnosis (if reported with an ICD-9-CM code between 001 and 999).

For summary purposes, all illness and injury-specific diagnoses (as defined by the ICD-9-CM) were grouped into 139 burden of disease-related conditions and 25 categories based on a modified version of the classification system developed for the Global Burden of Disease (GBD) Study.¹ In general, the GBD system groups diagnoses with common pathophysiologic or etiologic bases and/or significant international health policymaking importance. For this analysis, some diagnoses that are grouped into single categories in the GBD system (e.g., mental disorders) were disaggregated to increase the military relevance of the results. Also injuries were categorized by affected anatomic site rather than by cause because external causes of injuries are incompletely reported in military outpatient records.

The “morbidity burdens” attributable to various “conditions” were estimated based on the total number of medical encounters attributable to each condition (i.e., total hospitalizations and ambulatory visits for the condition with a limit of one encounter per individual per condition per day); numbers of service members affected by each condition (i.e., individuals with at least one medical encounter for the condition during the year); total bed days during hospitalizations for each condition; and total number of lost duty

days due to each condition. This fourth measure represents the days of work time lost due to hospitalizations plus one day for each “sick in quarters” disposition and one-half day for each “limited duty” disposition that resulted from ambulatory visits for the condition of interest.

RESULTS

Morbidity burden, by category:

In 2012, more service members (n=600,006) received medical care for injuries and poisonings than any other morbidity-related category. In addition, injuries and poisonings accounted for more medical encounters (n=2,203,706) than any other morbidity category and one-fifth (20.8%) of all medical encounters overall (**Figure 1**).

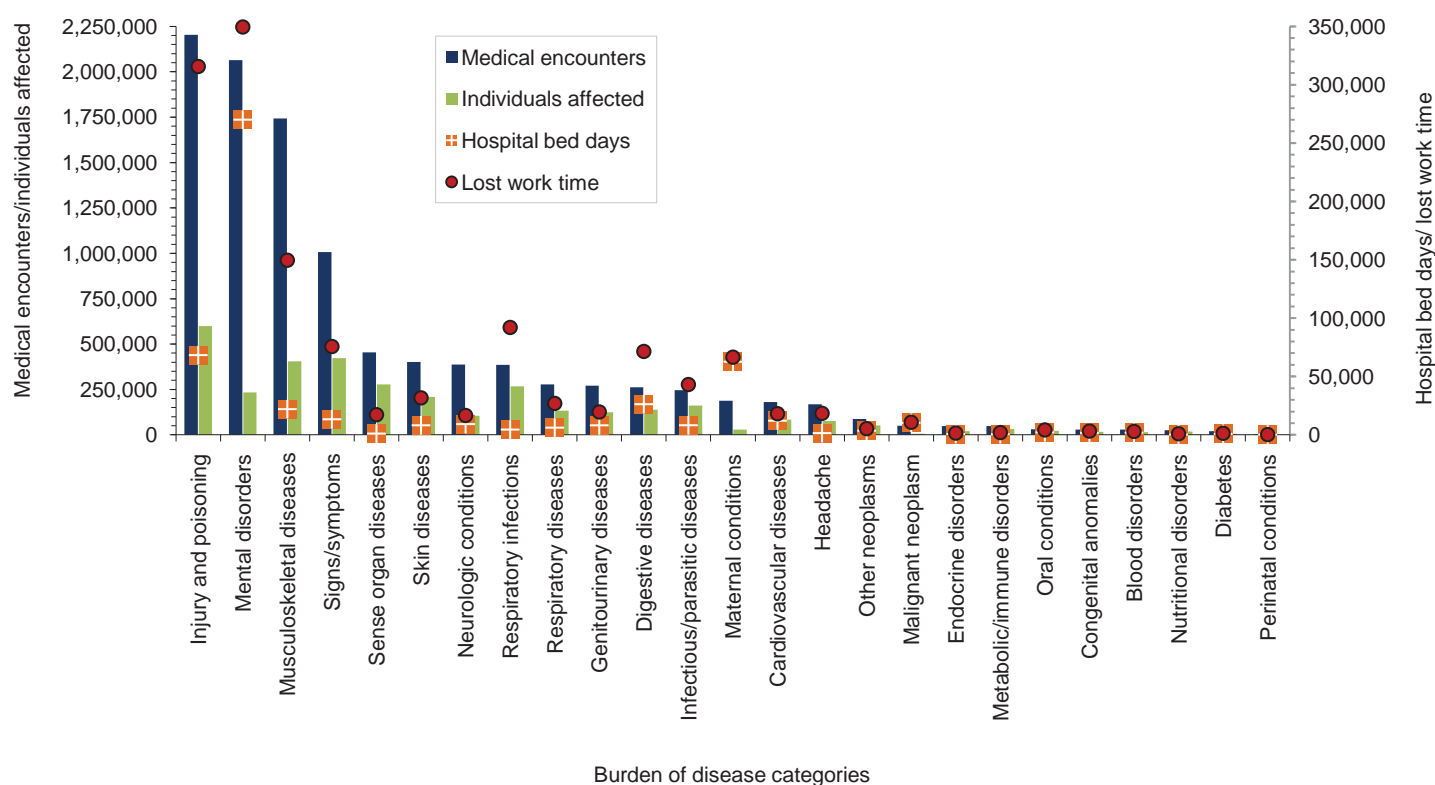
Mental disorders accounted for more hospital bed days (n=270,078) than any other morbidity category and nearly half (49.6%) of all hospital bed days overall. Together, injuries and poisonings, and mental disorders accounted for nearly two-thirds (62.2%) of all hospital bed days and two-fifths (40.2%) of all medical encounters. Mental disorders also accounted for the most lost work time (n=349,464 lost duty days; 26.0% of the total) (**Figure 1**).

Of note, maternal conditions (including pregnancy complications and delivery) accounted for a relatively large proportion of all hospital bed days (n=62,649; 11.5%) but relatively few (n=187,553; 1.8%) medical encounters overall (**Figure 1**).

Medical encounters, by condition:

In 2012, the four burden of disease-related conditions that accounted for the most medical encounters – “other back problems,” “other musculoskeletal diseases,” “other signs and symptoms,” and “anxiety” – accounted for more than one-fourth

FIGURE 1. Medical encounters,^a individuals affected,^b hospital bed days, and lost work time^c by burden of disease category,^d active component, U.S. Armed Forces, 2012



^aMedical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition).

^bIndividuals with at least one hospitalization or ambulatory visit for the condition.

^cA measure of lost work time calculated in days due to bed days, convalescence, and one-half day for each ambulatory visit that resulted in limited duty.

^dMajor categories and conditions defined in the Global Burden of Disease Study.

(26.7%) of all illness and injury-related medical encounters overall. Moreover, the 10 conditions that accounted for the most medical encounters accounted for over half (51.9%) of all illness and injury-related medical encounters overall (**Figure 2**). In general, the conditions that accounted for the most medical encounters were predominantly musculoskeletal disorders (e.g., back), injuries (e.g., arm/shoulder, knee, foot/ankle), and substance abuse and other mental disorders (e.g., anxiety, adjustment, mood disorders) (**Table 1, Figure 2**).

Individuals affected, by condition:

In 2012, more service members received medical care for “all other musculoskeletal diseases” than for any other specific condition (**Table 1**). Of the 10 conditions that affected the most service members, two were musculoskeletal diseases

(all other musculoskeletal diseases and other back problems) and three were injuries (arm/shoulder, knee, and foot/ankle). Of note, more individuals were affected by unspecified (“all other”) musculoskeletal disorders (e.g., disorders of “other” joints, muscles, tendons, soft tissues) than by musculoskeletal conditions affecting the back (**Table 1**).

Hospital bed days, by condition:

In 2012, mood disorders and substance abuse accounted for nearly one-third (31.2%) of all hospital days. Together, four mental disorders (substance abuse, mood, anxiety, and adjustment reaction) and one pregnancy and delivery-related condition accounted for over one-half (53.9%) of all hospital bed days (**Table 1, Figure 3**). One-eighth (12.6%) of all hospital bed days were attributable to injuries and poisonings.

Lost work time, by condition:

No single condition accounted for more than 9 percent of all lost work time. Together, the four conditions with the most lost work time (substance abuse disorders, mood disorders, other back problems, and anxiety disorders) accounted for 26.9 percent all lost work time (**Table 1, Figure 4**).

Relationships between health care burden indicators:

There was a strong correlation between the number of medical encounters attributable to various conditions and the number of individuals affected by the conditions ($r=0.87$). For example, the three leading causes of medical encounters were among the four conditions that affected the most individuals (**Table 1**). There was also a strong relationship between lost work time attributable to conditions

TABLE 1. Health care burdens attributable to various diseases and injuries, U.S. Armed Forces, 2012

Major category condition ^a	Medical encounters ^b		Individuals affected ^c		Bed days	
	No.	Rank	No.	Rank	No.	Rank
Injury and poisoning						
Arm and shoulder	511,955	(5)	152,860	(7)	5,560	(21)
Knee	505,427	(6)	153,631	(6)	2,167	(34)
Foot and ankle	384,602	(10)	152,448	(8)	5,115	(23)
Leg	186,471	(17)	72,168	(20)	9,549	(12)
Unspecified injury	160,325	(21)	99,538	(14)	1,041	(52)
Hand and wrist	143,153	(24)	73,360	(19)	2,070	(38)
Head and neck	103,436	(27)	62,691	(24)	13,195	(9)
Back and abdomen	90,668	(30)	55,104	(27)	7,508	(15)
Other complications	44,355	(41)	22,584	(47)	13,485	(8)
Environmental	28,962	(50)	22,755	(46)	1,424	(41)
All other injury	17,963	(64)	11,589	(60)	2,502	(30)
Other injury/external	17,358	(66)	11,558	(61)	544	(69)
Poisoning, drugs	4,699	(92)	3,015	(84)	3,785	(27)
Poisoning, nondrug	4,332	(95)	3,002	(85)	392	(77)
Mental disorders						
Anxiety	563,500	(4)	76,989	(18)	50,619	(3)
Adjustment	435,060	(7)	96,701	(15)	33,085	(5)
Substance abuse dis	428,315	(8)	35,897	(34)	80,729	(2)
Mood	410,818	(9)	62,887	(22)	89,146	(1)
Other mental dis	152,979	(23)	59,856	(25)	5,099	(24)
Tobacco dependence	32,011	(49)	20,117	(49)	1	(136)
Psychotic	24,223	(56)	3,070	(83)	9,575	(11)
Personality	10,554	(75)	2,929	(86)	1,241	(44)
Somatoform	7,151	(86)	2,042	(93)	583	(67)
Musculoskeletal diseases						
Other back problems	917,738	(1)	214,210	(4)	9,301	(13)
Other musculoskel dis	751,401	(2)	256,231	(2)	9,614	(10)
Other knee dis	38,067	(45)	15,628	(57)	2,016	(39)
Other shoulder dis	16,955	(67)	8,481	(66)	198	(93)
Osteoarthritis	15,646	(69)	8,619	(65)	846	(59)
Rheumatoid arthritis	3,835	(99)	1,207	(98)	63	(111)
Signs and symptoms						
Other signs/symptoms	596,659	(3)	283,497	(1)	6,820	(17)
Abdomen and pelvis	223,402	(14)	132,097	(10)	2,731	(29)
Respiratory and chest	186,632	(16)	108,550	(12)	3,809	(26)
Sense organ diseases						
Refraction/accom	193,593	(15)	149,814	(9)	3	(135)
Other sense organ dis	180,100	(18)	111,792	(11)	1,055	(51)
Hearing disorders	64,506	(35)	38,614	(32)	24	(124)
Glaucoma	14,233	(71)	8,298	(67)	8	(133)
Cataracts	1,626	(112)	873	(103)	10	(132)
Respiratory infections						
Upper resp infections	297,451	(11)	226,382	(3)	812	(60)
Lower resp infections	55,290	(38)	35,803	(35)	3,681	(28)
Otitis media	32,105	(48)	24,907	(43)	60	(112)
Skin diseases						
All other skin diseases	289,778	(12)	155,532	(5)	8,087	(14)
Contact dermatitis	57,699	(37)	42,177	(30)	83	(108)
Sebaceous gland dis	54,462	(39)	32,487	(39)	38	(116)
Neurologic conditions						
Organic sleep disorders	268,656	(13)	69,136	(21)	631	(65)
Other neurologic cond	91,248	(29)	33,952	(36)	7,134	(16)
Mononeuritis, limbs	16,430	(68)	8,031	(68)	164	(97)
Epilepsy	6,957	(87)	2,204	(90)	925	(56)
Multiple sclerosis	3,821	(100)	680	(106)	366	(79)
Parkinson disease	366	(127)	65	(128)	0	(139)
Respiratory diseases						
Allergic rhinitis	101,761	(28)	45,924	(28)	26	(120)
Other resp diseases	68,321	(34)	37,914	(33)	5,187	(22)
Chronic sinusitis	42,071	(42)	31,655	(40)	163	(98)
Asthma	38,610	(44)	17,467	(51)	534	(70)
COPD	27,965	(53)	23,079	(45)	279	(82)
Genitourinary diseases						
Other genitourinary dis	162,672	(20)	88,794	(16)	3,916	(25)
Female genital pain	28,557	(52)	16,175	(54)	296	(81)
Kidney stones	24,395	(55)	9,056	(63)	1,191	(47)
Menstrual disorders	23,118	(58)	14,599	(59)	1,065	(50)
Other breast disorders	20,434	(63)	10,795	(62)	462	(76)
Nephritis and nephrosis	8,112	(82)	2,206	(89)	1,212	(45)
Benign prostatic hyper	3,002	(103)	1,921	(94)	50	(114)
Digestive diseases						
Other digestive dis	127,452	(25)	62,750	(23)	16,327	(7)
Other gastroent/colitis	71,149	(33)	58,095	(26)	1,035	(53)
Esophagus disease	40,012	(43)	25,706	(42)	1,120	(49)
Inguinal hernia	13,848	(72)	5,971	(73)	661	(64)
Appendicitis	6,187	(88)	3,253	(81)	6,318	(19)
Cirrhosis of the liver	2,186	(108)	1,451	(97)	153	(99)
Peptic ulcer disease	1,564	(113)	928	(102)	663	(63)
Infectious and parasitic diseases						
Other infect/para dis	155,893	(22)	101,326	(13)	5,780	(20)
Unspec viral infection	36,903	(46)	32,489	(38)	200	(92)
STDs	23,293	(57)	17,085	(52)	519	(71)
Diarrheal diseases	17,675	(65)	15,273	(58)	1,387	(42)
Chlamydia	8,431	(80)	6,998	(70)	13	(131)
Hepatitis B and C	3,305	(102)	1,056	(101)	36	(117)
Tuberculosis	792	(118)	449	(113)	84	(107)
Intest nematode infect	203	(134)	188	(123)	0	(138)
Malaria	186	(135)	62	(130)	104	(104)
Bacterial meningitis	159	(136)	45	(134)	108	(103)
Tropical cluster	152	(137)	60	(131)	21	(126)
Cardiovascular diseases						
Other cardiovasc dis	88,378	(31)	43,861	(29)	6,400	(18)
Essential hypertension	74,611	(32)	40,600	(31)	616	(66)
Ischemic heart disease	8,413	(81)	3,286	(80)	2,111	(37)
Cerebrovascular dis	7,748	(84)	2,235	(88)	2,229	(32)
Inflammatory	1,321	(115)	500	(110)	761	(62)
Rheumatic heart dis	674	(122)	456	(112)	24	(121)

^aMajor categories and conditions defined in the Global Burden of Disease study.¹

^bMedical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition).

^cIndividuals with at least one hospitalization or ambulatory visit for the condition.

TABLE 1. Health care burdens attributable to various diseases and injuries, U.S. Armed Forces, 2012

Major category condition ^a	Medical encounters ^b		Individuals affected ^c		Bed days	
	No.	Rank	No.	Rank	No.	Rank
Maternal conditions						
Pregnancy compl	116,661	(26)	24,107	(44)	21,434	(6)
Delivery	59,027	(36)	18,375	(50)	39,735	(4)
Ectopic/miscarriage/abortion	9,277	(78)	4,036	(78)	811	(61)
Puerperium compl	2,505	(106)	1,551	(96)	565	(68)
Other maternal dis	83	(138)	47	(133)	104	(105)
Headache						
Headache	167,902	(19)	77,586	(17)	1,514	(40)
Other neoplasms						
All other neoplasms	51,188	(40)	33,637	(37)	2,254	(31)
Benign skin neoplasm	21,039	(60)	16,843	(53)	22	(125)
Lipoma	10,142	(76)	6,363	(72)	93	(106)
Uterine leiomyoma	4,646	(93)	2,195	(91)	1,204	(46)
Malignant neoplasms						
Other mal neoplasms	7,915	(83)	1,192	(99)	2,150	(36)
Lymphoma/myeloma	7,638	(85)	780	(104)	999	(55)
Melanoma/skin cancers	5,162	(89)	2,299	(87)	237	(85)
Leukemia	5,040	(91)	258	(121)	2,204	(33)
Breast cancer	4,246	(96)	400	(115)	174	(95)
Testicular cancer	4,132	(97)	740	(105)	491	(73)
Colon/rectum cancers	3,693	(101)	293	(117)	876	(58)
Brain	3,001	(104)	264	(120)	1,033	(54)
Thyroid	2,419	(107)	553	(109)	369	(78)
Prostate cancer	1,822	(110)	343	(116)	207	(90)
Mouth/oropharynx	1,370	(114)	156	(124)	221	(88)
Trachea/bronchus/lung	702	(121)	77	(127)	326	(80)
Pancreas cancer	504	(124)	26	(137)	236	(86)
Bladder cancer	347	(128)	85	(126)	18	(128)
Stomach cancer	343	(129)	35	(135)	78	(109)
Esophagus cancer	313	(130)	21	(139)	169	(96)
Ovary cancer	271	(131)	63	(129)	256	(83)
Cervix uteri cancer	263	(132)	50	(132)	70	(110)
Liver cancer	221	(133)	34	(136)	195	(94)
Corpus uteri cancer	78	(139)	21	(138)	20	(127)
Diabetes mellitus						
Diabetes mellitus	20,539	(62)	5,470	(74)	902	(57)
Endocrine disorders						
Other endocrine dis	21,607	(59)	8,668	(64)	251	(84)
Hypothyroidism	14,591	(70)	7,775	(69)	24	(123)
Other thyroid disorders	12,962	(73)	5,283	(76)	463	(75)
Nutritional disorders						
Lipoid metabolism dis	34,489	(47)	26,207	(41)	58	(113)
Other metabolic dis	12,879	(74)	6,753	(71)	496	(72)
Immunity disorders	1,028	(117)	292	(118)	16	(129)
Oral conditions						
Other oral conditions	28,786	(51)	21,356	(48)	2,165	(35)
Dental caries	731	(119)	633	(107)	3	(134)
Periodontal disease	644	(123)	602	(108)	32	(118)
Congenital anomalies						
Other congenital anom	25,441	(54)	15,813	(56)	1,317	(43)
Congenital heart dis	2,141	(109)	1,106	(100)	204	(91)
Other circulatory anom	1,071	(116)	420	(114)	208	(89)
Blood disorders						
Other blood disorders	9,926	(77)	4,707	(77)	1,149	(48)
Other non-def anemias	9,247	(79)	5,300	(75)	471	(74)
Iron-deficiency anemia	4,442	(94)	2,183	(92)	147	(100)
Hereditary anemias	4,103	(98)	3,479	(79)	110	(102)
Other def anemias	487	(125)	274	(119)	0	(137)
Nutritional disorders						
Overweight, obesity	20,650	(61)	15,950	(55)	235	(87)
Other nutritional dis	5,136	(90)	3,103	(82)	14	(130)
Protein-energy malnutrition	397	(126)	124	(125)	28	(119)
Conditions arising during the perinatal period^d						
Other perinatal anom	2,654	(105)	1,553	(95)	24	(122)
Low birth weight	1,673	(111)	482	(111)	133	(101)
Birth asphyxia/trauma	704	(120)	232	(122)	41	(115)

^aMajor categories and conditions defined in the Global Burden of Disease study.¹

^bMedical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition).

^cIndividuals with at least one hospitalization or ambulatory visit for the condition.

^dConditions affecting newborns erroneously coded on service members' medical records.

and medical encounters attributable to ($r=0.83$) the same conditions. For example, of the 10 conditions that resulted in the most lost work time, nine were among the top 10 leading causes of medical encounters. In contrast, there were not strong relationships between the hospital bed days attributable to conditions and either the numbers of individuals affected by ($r=0.20$) or medical encounters attributable to ($r=0.48$) the

same conditions. For example, labor and delivery and substance abuse disorders were among the top four sources of hospital bed days; however, these conditions affected relatively few service members (**Table 1**).

Among the four burden measures, only four conditions ranked in the top 15 of each: other back problems, all other musculoskeletal diseases, adjustment disorder, and all other skin diseases (**Table 1**).

EDITORIAL COMMENT

This report reiterates the major findings of prior annual reports regarding morbidity and health care burdens among U.S. military members. In particular, the report documents that a majority of the morbidity and health care burden that affects U.S. military members is attributable to remarkably few (i.e., less than 8%) of the 139 burden of

FIGURE 2. Percentage and cumulative percentage distribution, burden “conditions” that accounted for the most medical encounters among U.S. service members, 2012

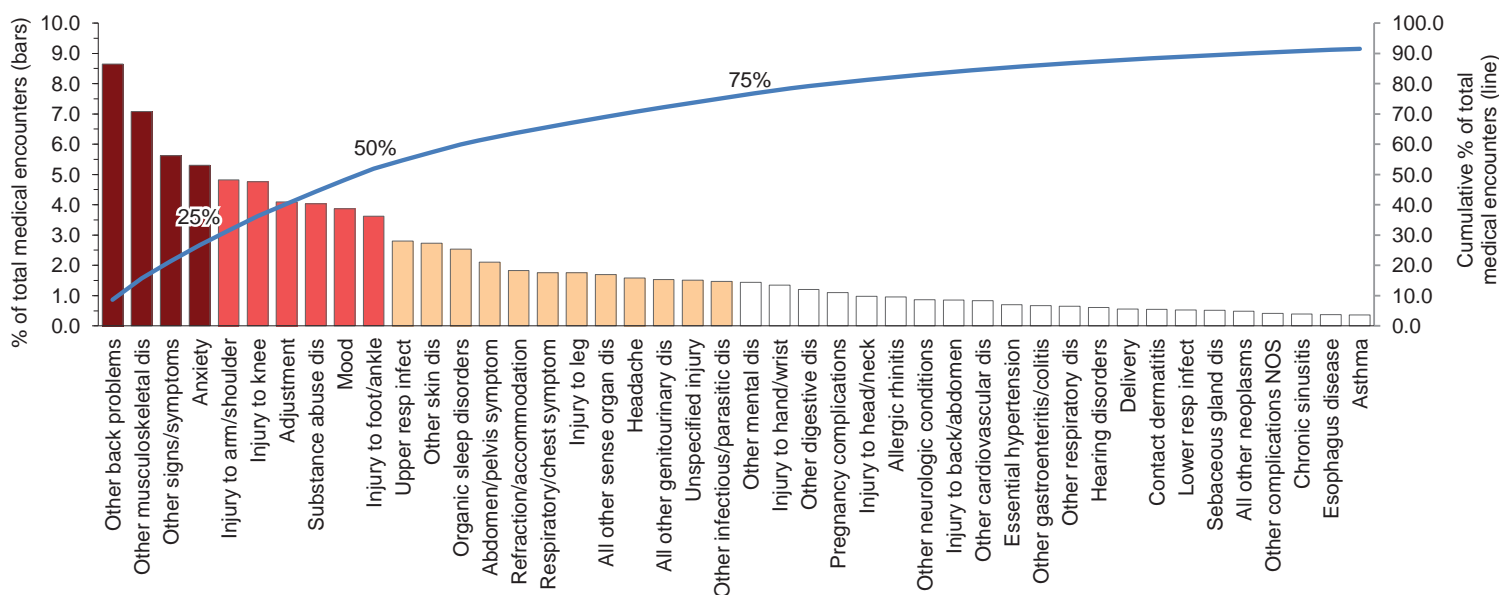
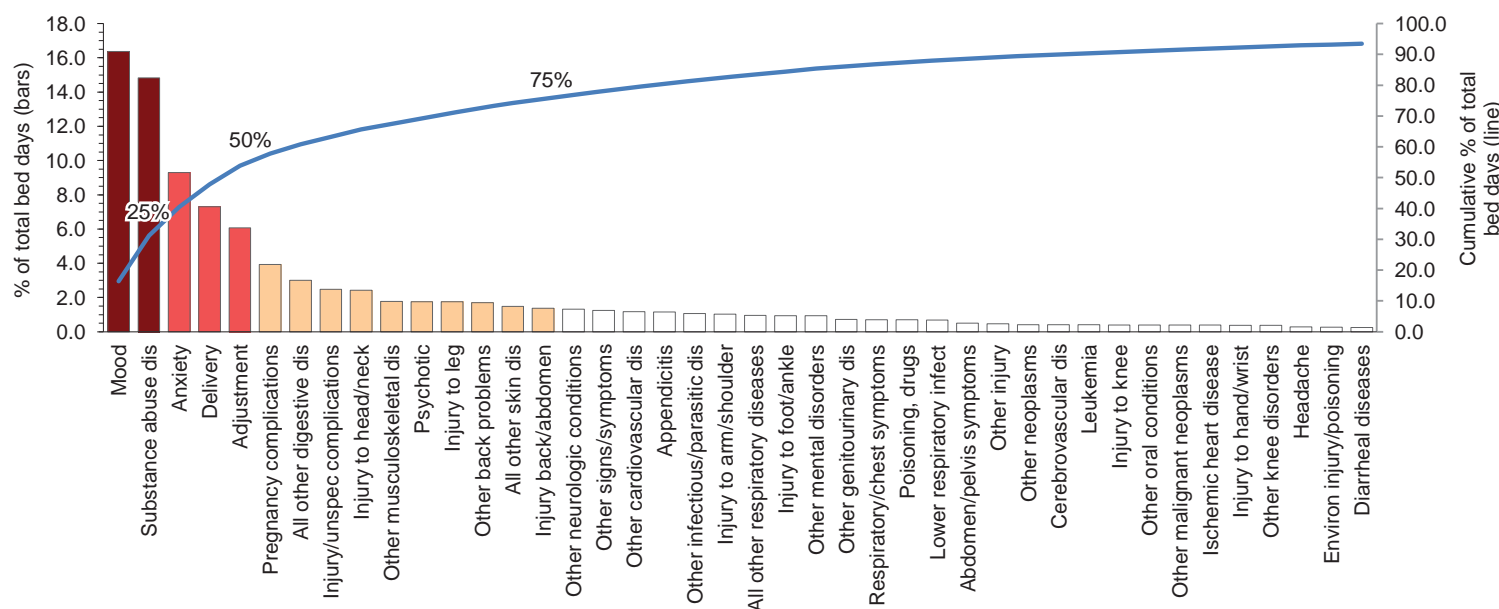


FIGURE 3. Percentage and cumulative percentage distribution, burden “conditions” that accounted for the most hospital bed days among U.S. service members, 2012



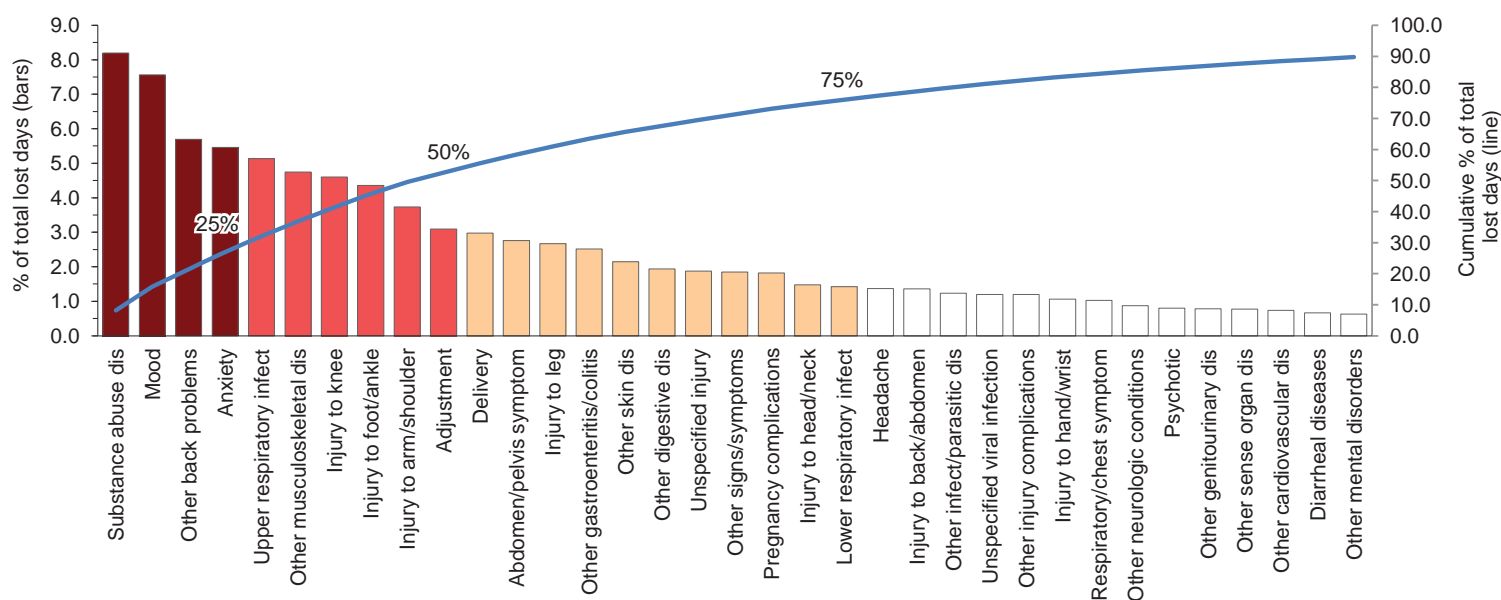
disease-defining conditions considered in the analysis.

In 2012, as in prior years, musculo-skeletal disorders (particularly of the back), injuries (particularly of the arm/shoulder, knee, and foot/ankle), mental disorders (particularly substance abuse and disorders of mood, anxiety, and adjustment), and

pregnancy and delivery-related conditions accounted for relatively large proportions of the morbidity and health care burdens that affected U.S. military members. For example, in 2012, substance abuse, mood, anxiety, and adjustment disorders accounted for 895 person-years of lost duty due to hospitalization, convalescence, and

limited duty dispositions; together, these four mental disorders and two pregnancy and delivery-related conditions accounted for more than half of all hospital bed days among active component members. Of note in this regard, since 2005, there has been a steep increase in hospital bed days due to mental disorders; in sharp contrast,

FIGURE 4. Percentage and cumulative percentage distribution, burden “conditions” that accounted for the most lost work time among U.S. service members, 2012



bed days related to pregnancy and delivery have been remarkably stable since 2001.³

Also, in 2012, 10 burden of disease-defined conditions accounted for more than half of all illness and injury-related medical encounters of active component members. The 10 conditions that accounted for the most medical encounters overall included four mental disorders (anxiety, substance abuse, adjustment, and mood), three anatomic site-defined injuries (arm/shoulder, knee, and foot/ankle), and two musculoskeletal disorders (back and disorders of “other” joints, muscles, tendons, soft tissues).

Throughout military history, mental disorders (including substance abuse disorders), injuries, and musculoskeletal disorders of the back have been leading causes of morbidity and lost duty time among service members.⁴⁻⁸ As noted many times in the past, the prevention, treatment, and rehabilitation of back problems and joint injuries, and the detection, characterization, and management of mental disorders – including substance abuse

and deployment stress-related disorders, e.g., PTSD – should have the highest priorities for military medical research, public health, and force health protection programs.

In summary, this analysis, like those of recent years, documents that a relatively few illnesses and injuries account for most of the morbidity and health care burdens that affect U.S. military members. Illnesses and injuries that disproportionately contribute to morbidity and health care burden should be high priority targets for prevention research and resources.

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Hospitalizations Among Members of the Active Component, U.S. Armed Forces, 2012

This report documents the frequencies, rates, trends, and distributions of hospitalizations of active component members of the U.S. Armed Forces during calendar year 2012. Summaries are based on standardized records of hospitalizations at U.S. military and non-military (reimbursed care) medical facilities worldwide. For this report, primary (first-listed) discharge diagnoses are considered indicative of the primary reasons for hospitalizations; summaries are based on the first three digits of ICD-9-CM codes used to report primary discharge diagnoses. Hospitalizations not routinely documented with standardized, automated records (e.g., during deployments, field training exercises, shipboard) are not centrally available for health surveillance purposes and thus are not included in this report.

Frequencies, rates, and trends:

In 2012 there were 96,388 records of hospitalizations of active component

members of the U.S. Army, Navy, Air Force, Marine Corps, and Coast Guard; 41 percent of the hospitalizations were in non-military facilities (**Table 1, Figure 1**). The hospitalization rate (all causes) was 67.2 per 1,000 service member person-years (p-yrs). The annual hospitalization rate (all causes) was lower compared to 2011 but higher compared to 2003 to 2010 (annual hospitalization rate minimum: 57.6 per 1,000 p-yrs, 2005; maximum: 71.3 per 1,000 p-yrs, 2011) (**Figure 1**).

Hospitalizations, by illness and injury categories:

As in prior years, in 2012 three diagnostic categories accounted for more than half (56.1%) of all hospitalizations of active component members: mental disorders (26.1%), pregnancy and delivery-related conditions (18.4%), and injuries and poisonings (11.6%) (**Table 1**). In contrast to 2008, in 2010 and 2012 there were more hospitalizations for mental disorders than for any other major diagnostic category (per the ICD-9-CM).

Comparing 2012 to 2008, numbers of hospitalizations increased in 11 and decreased in 6 major categories of illnesses and injuries. The largest percentage increases between 2008 and 2012 were for “other” or V-coded hospitalizations (primarily orthopedic aftercare and rehabilitation following a previous illness or injury) (hosp diff, 2008-2012: +1,658; +68.0%) and for mental disorders (hosp diff, 2008-2012: +8,951; +55.3%). The largest percentage decrease during the same period was for the skin and subcutaneous tissue category (hosp diff, 2008-2012: -560; -23.5%) (**Table 1**).

Hospitalizations, by gender:

In 2012, the hospitalization rate (all causes) among females was nearly three times that of males (hospitalization rate, overall: females: 151.2 per 1,000 p-yrs; males: 51.7 per 1,000 p-yrs); however, pregnancy and delivery accounted for 55.8 percent of all hospitalizations of females. Excluding pregnancy and delivery, the rate

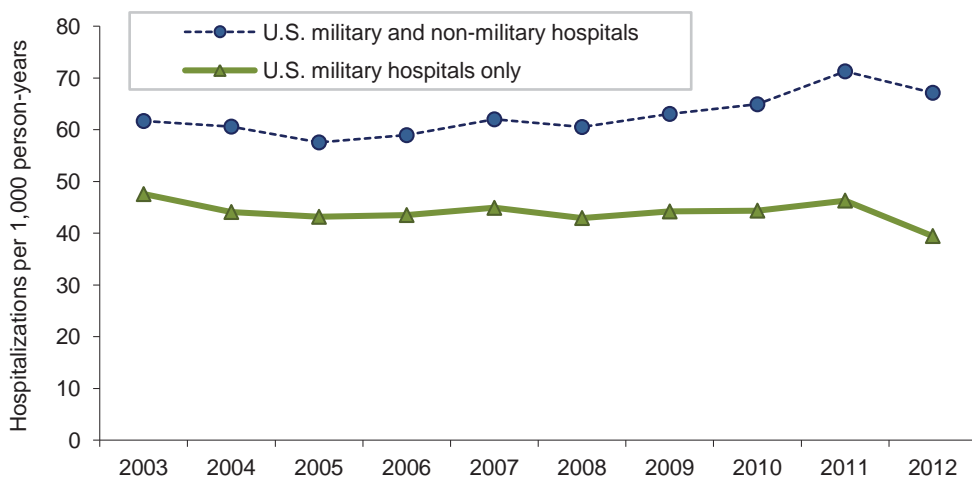
TABLE 1. Hospitalizations, ICD-9-CM major diagnostic categories, active component, U.S. Armed Forces, 2008, 2010, and 2012

Major diagnostic category (ICD-9-CM)	2008			2010			2012		
	No.	Rate ^a	Rank	No.	Rate ^a	Rank	No.	Rate ^a	Rank
Mental disorders (290-319)	16,175	11.4	(2)	19,745	13.5	(1)	25,126	17.5	(1)
Pregnancy and delivery (630-679, relevant V-codes) ^b	17,558	12.3 (87.2)	(1)	18,963	13.0 (90.7)	(2)	17,782	12.4 (84.9)	(2)
Injury and poisoning (800-999)	11,982	8.4	(3)	12,252	8.4	(3)	11,140	7.8	(3)
Digestive system (520-579)	7,644	5.4	(5)	8,349	5.7	(4)	8,184	5.7	(4)
Musculoskeletal system/connective tissue (710-739)	7,682	5.4	(4)	7,919	5.4	(5)	7,474	5.2	(5)
Signs, symptoms, ill-defined conditions (780-799)	4,450	3.1	(6)	4,844	3.3	(6)	4,739	3.3	(6)
Other (V01-V82, except pregnancy-related)	2,437	1.7	(10)	3,693	2.5	(7)	4,095	2.9	(7)
Circulatory system (390-459)	2,794	2.0	(8)	3,040	2.1	(8)	2,950	2.1	(8)
Genitourinary system (580-629)	2,744	1.9	(9)	2,839	1.9	(10)	2,698	1.9	(9)
Respiratory system (460-519)	3,077	2.2	(7)	2,937	2.0	(9)	2,686	1.9	(10)
Nervous system (320-389)	1,953	1.4	(13)	2,278	1.6	(11)	2,305	1.6	(11)
Neoplasms (140-239)	2,176	1.5	(12)	2,261	1.6	(12)	2,132	1.5	(12)
Skin and subcutaneous tissue (680-709)	2,387	1.7	(11)	2,244	1.5	(13)	1,827	1.3	(13)
Infectious and parasitic diseases (001-139)	1,290	0.9	(14)	1,496	1.0	(14)	1,499	1.0	(14)
Endocrine, nutrition, immunity (240-279)	858	0.6	(15)	944	0.6	(15)	916	0.6	(15)
Congenital anomalies (740-759)	355	0.3	(16)	493	0.3	(16)	445	0.3	(16)
Hematologic disorders (280-289)	339	0.2	(17)	397	0.3	(17)	390	0.3	(17)
Total	85,901	60.5		94,694	64.9		96,388	67.2	

^aRates are expressed as hospitalizations per 1,000 person-years

^bRate of pregnancy and delivery-related hospitalizations among females only (in parentheses)

FIGURE 1. Rates of hospitalization by year, active component, U.S. Armed Forces, 2003–2012



of hospitalizations among females (66.9 per 1,000 p-yrs) was 29 percent higher than among males (**data not shown**).

Hospitalization rates were higher among males than females for injuries and poisonings (male:female [m:f], rate difference [RD]: 2.5 per 1,000 p-yrs). Hospitalization rates were higher among females than males for genitourinary disorders (RD: 5.4 per 1,000 p-yrs), mental disorders (RD: 4.5 per 1,000 p-yrs), neoplasms (RD: 2.9 per 1,000 p-yrs), digestive symptoms (RD: 1.5 per 1,000 p-yrs), “other” V-coded conditions (RD: 1.4 per 1,000 p-yrs), and signs, symptoms, and ill-defined conditions (RD: 1.2 per 1,000 p-yrs). Hospitalization rates were similar among males and females for the remaining nine major disease-specific categories (**data not shown**).

Relationships between age and hospitalization rates significantly varied across illness- and injury-specific categories. For example, among both males and females, hospitalization rates sharply increased with age for neoplasms, circulatory, genitourinary, and musculoskeletal system/connective tissue disorders; rates decreased with age for mental disorders; and rates were generally stable across age groups for infectious and parasitic diseases, digestive disorders, and injuries and poisonings (**Figure 2**).

Most frequent diagnoses:

In 2012, seven diagnoses (at the 3-digit level of the ICD-9-CM) each accounted for more than 1,500 hospitalizations among

males: adjustment reactions (n=6,187), episodic mood disorders (n=5,254), intervertebral disc disorders (n=2,321), alcohol dependence syndrome (n=2,294), acute appendicitis (n=1,852), depressive disorder (n=1,718), and symptoms involving the respiratory system (n=1,516). These seven diagnoses accounted for nearly one-third (32.8%) of all hospitalizations of males in 2012 (**Table 2**).

In 2012, pregnancy and delivery-related conditions accounted for 56 percent of all hospitalizations of females. Other than pregnancy and delivery-related diagnoses, leading causes of hospitalizations of females were episodic mood disorders (n=1,452), adjustment reactions (n=1,403), depressive disorder (n=412), uterine leiomyoma (n=391), intervertebral disc disorders (n=306), and alcohol dependence syndrome (n=303). These six diagnoses accounted for 30 percent of all hospitalizations (not related to pregnancy/delivery) of females (**Table 3**).

Mental health conditions:

In 2012, mental disorders accounted for more hospitalizations of U.S. service members than any other major diagnostic category (**Table 1**). Adjustment reactions (including post-traumatic stress disorder) and episodic mood disorders were associated with more hospitalizations among active component members than any other specific condition (at the 3-digit level); together, these two conditions accounted

for 18 percent and 20 percent of all hospitalizations of males and females (excluding pregnancy/delivery), respectively (**Tables 2,3**).

Injuries and poisonings:

As in the past, in 2012 injuries and poisonings were a leading cause of hospitalizations of U.S. military members (**Table 1**). Of all injuries and poisonings that resulted in hospitalizations in U.S. military medical facilities (n=6,499), approximately one in eight (n=809; 12.4%) were reported as “intentionally inflicted” (e.g., enemy weapons; suicide gestures/attempts; fights, assaults, legal interventions). A majority of hospitalizations categorized as “intentionally inflicted” were reported as “battle casualties” (n=461; 57.0%). Of all “unintentional” injuries and poisonings that resulted in hospitalizations in U.S. military facilities (n=5,632), approximately two-thirds (62.1%) were considered caused by falls and miscellaneous (n=1,579), complications of medical or surgical care (n=1,200), or guns and explosives (n=718) (**Table 4**).

Among males, injury and poisoning-related hospitalizations were most often related to complications of medical and surgical procedures and fractures of ankle, face, or leg bones (**Table 2**). Among females, injury and poisoning-related hospitalizations were most often related to complications of medical and surgical procedures and poisonings (e.g., psychotropic agents, analgesics, antipyretics, and antirheumatics) (**Table 3**).

Durations of hospitalizations:

Since 2003, the median durations of hospitalizations (all causes) have been stable (3 days), but the durations of the longest hospitalizations have increased (**Figure 3**). In 2012 as in previous years, medians and ranges of durations of hospitalizations significantly varied across major diagnostic categories. For example, median lengths of hospitalizations varied from two days (e.g., musculoskeletal system/connective tissue disorders; signs, symptoms, and ill-defined conditions) to six days (i.e., mental disorders). For most diagnostic categories, less than five percent of hospitalizations exceeded 15 days, but for four categories,

FIGURE 2. Rates (per 1,000 person-years) of hospitalization by major diagnostic categories, by age and gender, active component, U.S. Armed Forces, 2012

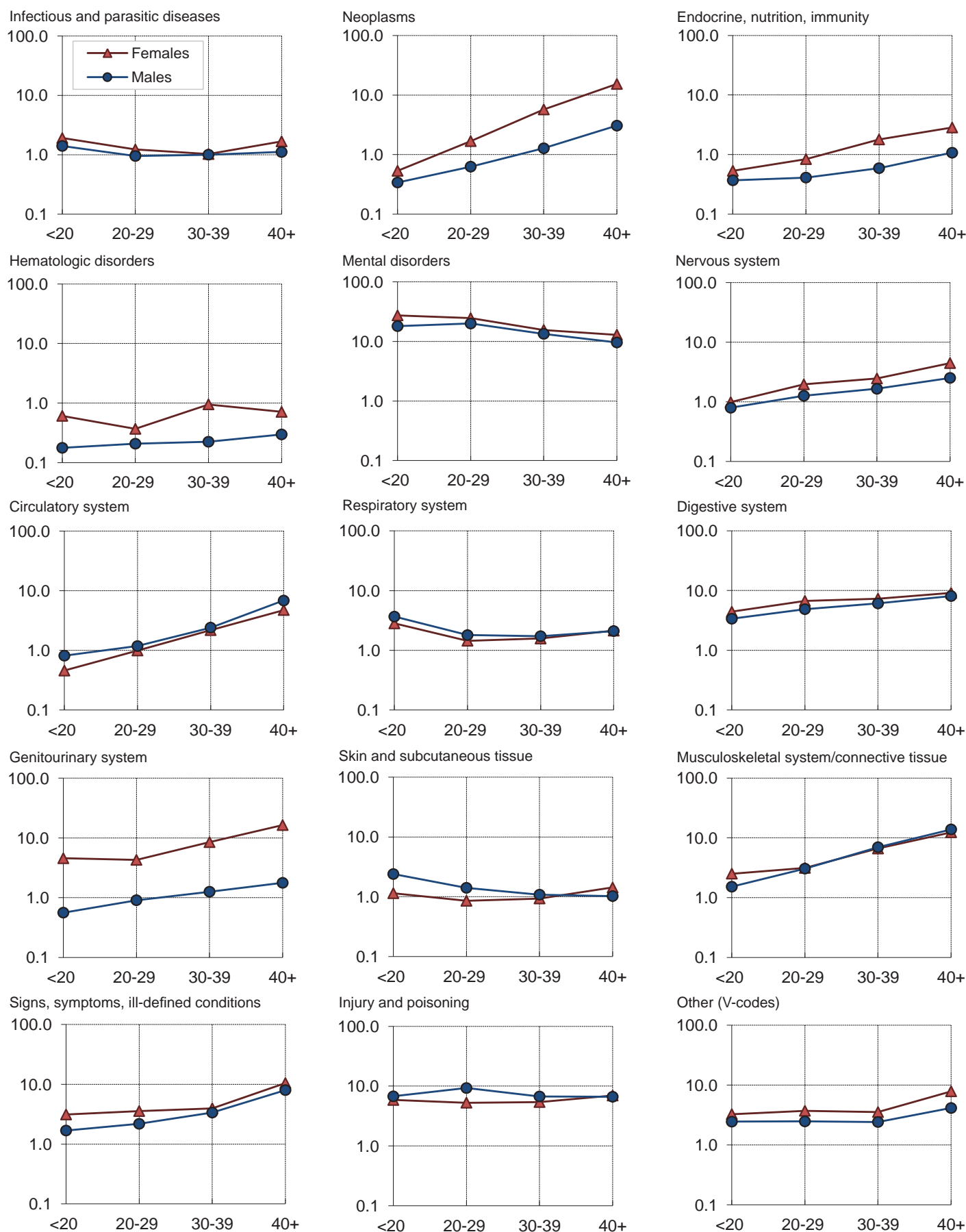


TABLE 2. Most frequent diagnoses during hospitalization by major diagnostic category, males, active component, U.S. Armed Forces, 2012

Diagnostic category (ICD-9-CM codes) ♂	No.	%	Diagnostic category (ICD-9-CM codes) ♂	No.	%
Infectious and parasitic diseases (001 - 139)	1,236		Digestive system (520 - 579)	6,730	
Septicemia	272	22.0	Acute appendicitis	1,852	27.5
Intestinal infections due to other organisms	197	15.9	Dentofacial anomalies including malocclusion	487	7.2
Meningitis due to enterovirus	158	12.8	Diseases of pancreas	475	7.1
Ill-defined intestinal infections	112	9.1	Cholelithiasis	393	5.8
Viral and chlamydial infection ^a	63	5.1	Diseases of esophagus	345	5.1
Neoplasms (140 - 239)	1,305		Genitourinary system (580 - 629)	1,327	
Malignant neoplasm of thyroid gland	88	6.7	Calculus of kidney and ureter	386	29.1
Malignant neoplasm of brain	80	6.1	Acute renal failure	236	17.8
Malignant neoplasm of testis	79	6.1	Other disorders of male genital organs	123	9.3
Malignant neoplasm of prostate	66	5.1	Urethral stricture	89	6.7
Myeloid leukemia	60	4.6	Other disorders of kidney and ureter	83	6.3
Endocrine, nutrition, immunity (240 - 279)	653		Skin and subcutaneous tissue (680 - 709)	1,629	
Diabetes mellitus	208	31.9	Other cellulitis and abscess	1,142	70.1
Disorders of fluid electrolyte and acid-base balance	203	31.1	Pilonidal cyst	133	8.2
Nontoxic nodular goiter	39	6.0	Cellulitis and abscess of finger and toe	92	5.6
Thyrotoxicosis with or without goiter	32	4.9	Other disorders of skin and subcutaneous tissue	51	3.1
Overweight, obesity and other hyperalimentation	30	4.6	Other hypertrophic and atrophic conditions of skin	26	1.6
Hematologic disorders (280 - 289)	271		Musculoskeletal system/connective tissue (710 - 739)	6,453	
Diseases of white blood cells	76	28.0	Intervertebral disc disorders	2,321	36.0
Purpura and other hemorrhagic conditions	57	21.0	Disorders of muscle ligament and fascia	556	8.6
Other diseases of blood and blood-forming organs	42	15.5	Spondylosis and allied disorders	537	8.3
Aplastic anemia	25	9.2	Osteoarthritis and allied disorders	451	7.0
Other and unspecified anemias	23	8.5	Other and unspecified disorders of back	409	6.3
Mental disorders (290 - 319)	20,675		Congenital anomalies (740 - 759)	375	
Adjustment reaction	6,187	29.9	Other congenital musculoskeletal anomalies	115	30.7
Episodic mood disorders	5,254	25.4	Other congenital anomalies of circulatory system	40	10.7
Alcohol dependence syndrome	2,294	11.1	Other congenital anomalies of digestive system	35	9.3
Depressive disorder not elsewhere classified	1,718	8.3	Congenital anomalies of urinary system	30	8.0
Anxiety, dissociative and somatoform disorders	1,099	5.3	Anomalies of bulbus cordis, cardiac septal closure	25	6.7
Nervous system (320 - 389)	1,829		Signs, symptoms, ill-defined conditions (780 - 799)	3,842	
Pain, not elsewhere classified	280	15.3	Symptoms involving respiratory system	1,516	39.5
Organic sleep disorders	243	13.3	General symptoms	1,086	28.3
Epilepsy	214	11.7	Other symptoms involving abdomen and pelvis	507	13.2
Migraine	175	9.6	Symptoms involving head and neck	180	4.7
Other conditions of brain	78	4.3	Symptoms involving digestive system	135	3.5
Circulatory system (390 - 459)	2,611		Injury and poisoning (800 - 999)	9,986	
Cardiac dysrhythmias	531	20.3	Other complications of procedures not elsewhere classified	914	9.2
Acute pulmonary heart disease	315	12.1	Fracture of ankle	515	5.2
Acute myocardial infarction	193	7.4	Complications peculiar to certain specified procedures	440	4.4
Other venous embolism and thrombosis	142	5.4	Fracture of face bones	431	4.3
Hemorrhoids	125	4.8	Fracture of tibia and fibula	418	4.2
Respiratory system (460 - 519)	2,345		Other (V01-V82, except pregnancy-related)	3,249	
Pneumonia organism unspecified	655	27.9	Encounter for other and unspecified procedures and aftercare	847	26.1
Other diseases of lung	197	8.4	Care involving use of rehabilitation procedures	663	20.4
Pneumothorax	186	7.9	Observation, evaluation for suspected conditions not found	542	16.7
Deviated nasal septum	155	6.6	Convalescence and palliative care	414	12.7
Asthma	151	6.4	Other psychosocial circumstances	312	9.6

^aICD-9-CM code 079 is for "viral and chlamydial infection in conditions classified elsewhere and of unspecified site" and is to be used to identify the viral or chlamydial agent in diseases classifiable elsewhere and to classify virus or chlamydial infection of unspecified nature or site.

TABLE 3. Most frequent diagnoses during hospitalization by major diagnostic category, females, active component, U.S. Armed Forces, 2012

Diagnostic category (ICD-9-CM codes)	♀	No.	%	Diagnostic category (ICD-9-CM codes)	♀	No.	%
Infectious and parasitic diseases (001 - 139)		263		Digestive system (520 - 579)		1,454	
Septicemia		56	21.3	Acute appendicitis		276	19.0
Meningitis due to enterovirus		51	19.4	Cholelithiasis		214	14.7
Intestinal infections due to other organisms		48	18.3	Dentofacial anomalies including malocclusion		164	11.3
Ill-defined intestinal infections		36	13.7	Diseases of pancreas		76	5.2
Viral and chlamydial infection ^a		13	4.9	Other and unspecified noninfectious gastroenteritis and colitis		72	5.0
Neoplasms (140 - 239)		827		Genitourinary system (580 - 629)		1,371	
Uterine leiomyoma		391	47.3	Disorders of menstruation and other abnormal bleeding		291	21.2
Benign neoplasm of ovary		51	6.2	Infections of kidney		166	12.1
Malignant neoplasm of female breast		48	5.8	Noninflammatory disorders of ovary fallopian tube		162	11.8
Malignant neoplasm of thyroid gland		42	5.1	Pain, other symptoms associated with female genital organs		122	8.9
Malignant neoplasm of ovary, other uterine adnexa		28	3.4	Other disorders of breast		103	7.5
Endocrine, nutrition, immunity (240 - 279)		263		Pregnancy and delivery (630 - 679, relevant V-codes)		17,782	
Disorders of fluid electrolyte and acid-base balance		63	24.0	Trauma to perineum and vulva during delivery		4,046	22.8
Nontoxic nodular goiter		45	17.1	Other current conditions complicating pregnancy		1,527	8.6
Overweight, obesity and other hyperalimentation		42	16.0	Other indications for care or intervention related to labor		1,420	8.0
Thyrotoxicosis with or without goiter		38	14.4	Abnormality of organs and soft tissues of pelvis		1,251	7.0
Diabetes mellitus		27	10.3	Late pregnancy		1,243	7.0
Hematologic disorders (280 - 289)		119		Skin and subcutaneous tissue (680 - 709)		198	
Iron deficiency anemias		28	23.5	Other cellulitis and abscess		119	60.1
Other and unspecified anemias		27	22.7	Pilonidal cyst		18	9.1
Diseases of white blood cells		24	20.2	Disorders of sweat glands		12	6.1
Purpura and other hemorrhagic conditions		16	13.4	Other disorders of skin and subcutaneous tissue		11	5.6
Other diseases of blood and blood-forming organs		12	10.1	Other hypertrophic and atrophic conditions of skin		10	5.1
Mental disorders (290 - 319)		4,451		Musculoskeletal system/connective tissue (710 - 739)		1,021	
Episodic mood disorders		1,452	32.6	Intervertebral disc disorders		306	30.0
Adjustment reaction		1,403	31.5	Spondylosis and allied disorders		78	7.6
Depressive disorder not elsewhere classified		412	9.3	Other and unspecified disorders of back		72	7.1
Alcohol dependence syndrome		303	6.8	Other disorders of bone and cartilage		67	6.6
Anxiety, dissociative and somatoform disorders		278	6.2	Disorders of muscle ligament and fascia		63	6.2
Nervous system (320 - 389)		476		Signs, symptoms, ill-defined conditions (780 - 799)		897	
Migraine		112	23.5	General symptoms		236	26.3
Pain, not elsewhere classified		74	15.5	Symptoms involving respiratory system		228	25.4
Epilepsy		55	11.6	Other symptoms involving abdomen and pelvis		223	24.9
Other conditions of brain		32	6.7	Symptoms involving head and neck		50	5.6
Multiple sclerosis		25	5.3	Symptoms involving digestive system		49	5.5
Circulatory system (390 - 459)		339		Injury and poisoning (800 - 999)		1,154	
Acute pulmonary heart disease		53	15.6	Other complications of procedures not elsewhere classified		171	14.8
Cardiac dysrhythmias		46	13.6	Poisoning by psychotropic agents		79	6.8
Occlusion of cerebral arteries		34	10.0	Complications peculiar to certain specified procedures		72	6.2
Other venous embolism and thrombosis		26	7.7	Certain adverse effects not elsewhere classified		64	5.5
Essential hypertension		23	6.8	Poisoning by analgesics antipyretics and antirheumatics		63	5.5
Respiratory system (460 - 519)		341		Other (V01-V82, except pregnancy-related)		846	
Pneumonia organism unspecified		66	19.4	Observation and evaluation for suspected conditions not found		289	34.2
Chronic disease of tonsils and adenoids		31	9.1	Encounter for other and unspecified procedures and aftercare		166	19.6
Asthma		29	8.5	Care involving use of rehabilitation procedures		100	11.8
Pneumothorax		22	6.5	Convalescence and palliative care		92	10.9
Other diseases of lung		22	6.5	Other orthopedic aftercare		56	6.6

^aICD-9-CM code 079 is for "viral and chlamydial infection in conditions classified elsewhere and of unspecified site" and is to be used to identify the viral or chlamydial agent in diseases classifiable elsewhere and to classify virus or chlamydial infection of unspecified nature or site.

TABLE 4. Injury and poisoning hospitalizations^a by causal agent,^b active component, U.S. Armed Forces, 2012

Cause	No.	%
Unintentional	5,632	86.7
Fall and miscellaneous	1,579	24.3
Complications of medical/surgical care	1,200	18.5
Guns, explosives (includes accidents during war)	718	11.0
Land transport	686	10.6
Poisons and fire	469	7.2
Athletics	296	4.6
Machinery, tools	260	4.0
Air transport	204	3.1
Environmental	204	3.1
Water transport	16	0.2
Intentional	809	12.4
Battle casualty	461	7.1
Self-inflicted	285	4.4
Non-battle, inflicted by other (e.g., assault)	63	1.0
Missing/invalid code	58	0.9
Total	6,499	100.0

^aHospitalizations in U.S. military medical facilities only

^bCausal agents were determined by codes IAW STANAG 2050

five percent of hospitalizations had longer durations: injury and poisoning – 18 days; neoplasms – 26 days; mental disorders – 36 days; and “other” or V-coded hospitalizations (primarily orthopedic aftercare and rehabilitation following a previous illness or injury) – 49 days (**Figure 4**).

Hospitalizations by service:

Among members of the Navy, Air Force, and Coast Guard, pregnancy and delivery-related conditions accounted for more hospitalizations than any other category of illnesses or injuries; however, among members of the Army and Marine Corps, mental disorders were the leading cause of hospitalizations. The crude hospitalization rate for mental disorders in the Army (28.1 per 1,000 p-yrs) was more than double that in the other Services (**Table 5**).

Injuries and poisonings were the second leading cause of hospitalizations in the Marine Corps, the third leading cause in

the Army and Navy, and the fifth leading cause in the Air Force and Coast Guard. The hospitalization rate for injuries and poisonings was 26 percent higher among soldiers (11.0 per 1,000 p-yrs) than Marines (8.7 per 1,000 p-yrs) and more than twice as high among soldiers than among members of the three other Services (**Table 5**).

EDITORIAL COMMENT

In 2012, for every 15 active component service members, there was one hospitalization for any cause; for every 19 members, there was one hospitalization for a condition not related to pregnancy and delivery. Hospitalization rates for all causes among

FIGURE 3. Length of hospital stay by year, active component, U.S. Armed Forces, 2002-2012

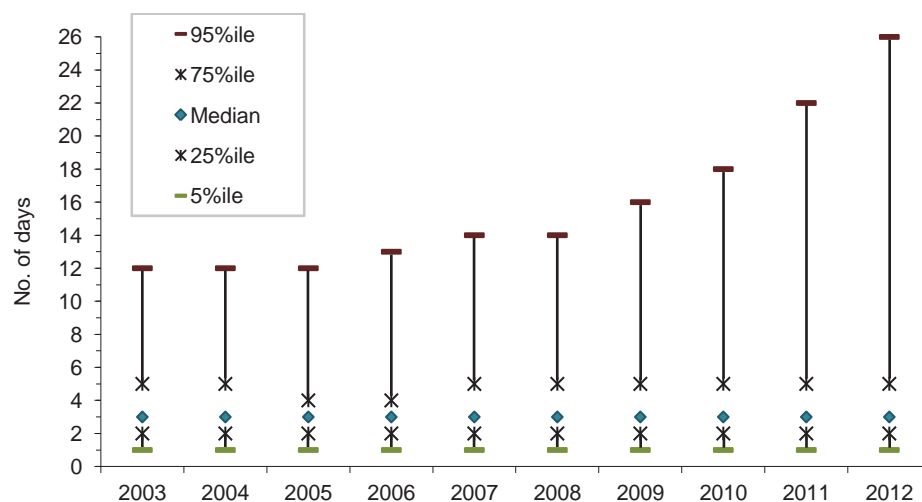


FIGURE 4. Length of hospital stay by major diagnostic category, active component, U.S. Armed Forces, 2012

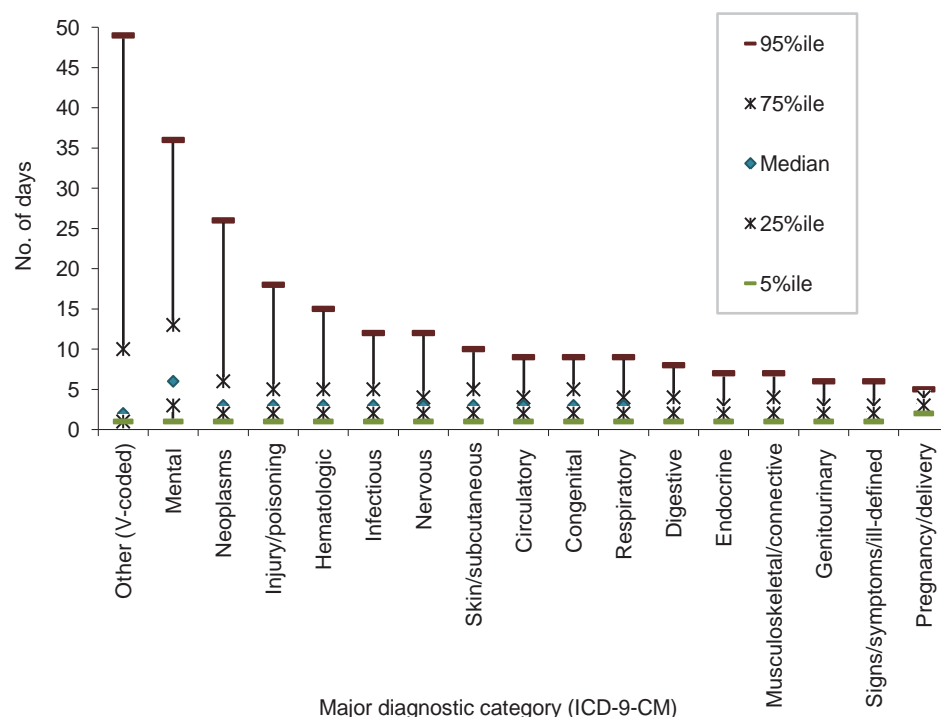


TABLE 5. Hospitalizations by service and ICD-9-CM diagnostic category, active component, U.S. Armed Forces, 2012

Major diagnostic category (ICD-9-CM)	Army		Navy		Air Force		Marine Corps		Coast Guard	
	No.	Rate ^a	No.	Rate ^a	No.	Rate ^a	No.	Rate ^a	No.	Rate ^a
Mental disorders (290-319)	15,422	28.1	3,298	10.4	3,713	11.3	2,348	11.9	345	8.2
Pregnancy/delivery (630-679, relevant V-codes) ^b	6,826	12.4 (92.0)	4,255	13.5 (80.4)	4,899	14.9 (78.6)	1,393	7.0 (100.5)	409	9.7 (68.0)
Injury and poisoning (800-999)	6,066	11.0	1,656	5.2	1,541	4.7	1,722	8.7	155	3.7
Digestive system (520-579)	3,817	6.9	1,537	4.9	1,716	5.2	918	4.6	196	4.7
Musculoskeletal system/connective tissue (710-739)	3,782	6.9	1,025	3.2	1,740	5.3	761	3.8	166	3.9
Signs, symptoms, ill-defined conditions (780-799)	2,685	4.9	769	2.4	913	2.8	327	1.7	45	1.1
Other (V01-V82, except pregnancy-related)	2,454	4.5	611	1.9	504	1.5	471	2.4	55	1.3
Circulatory system (390-459)	1,546	2.8	530	1.7	571	1.7	244	1.2	59	1.4
Respiratory system (460-519)	1,493	2.7	378	1.2	425	1.3	352	1.8	38	0.9
Genitourinary system (580-629)	1,282	2.3	493	1.6	629	1.9	238	1.2	56	1.3
Nervous system (320-389)	1,199	2.2	375	1.2	475	1.4	219	1.1	37	0.9
Neoplasms (140-239)	996	1.8	422	1.3	492	1.5	172	0.9	50	1.2
Skin and subcutaneous tissue (680-709)	856	1.6	340	1.1	272	0.8	331	1.7	28	0.7
Infectious and parasitic diseases (001-139)	678	1.2	267	0.8	294	0.9	222	1.1	38	0.9
Endocrine, nutrition, immunity (240-279)	516	0.9	147	0.5	160	0.5	86	0.4	7	0.2
Congenital anomalies (740-759)	207	0.4	81	0.3	86	0.3	62	0.3	9	0.2
Hematologic disorders (280-289)	173	0.3	81	0.3	79	0.2	43	0.2	14	0.3
Total	49,998	90.9	16,265	51.4	18,509	49.4	9,909	50.1	1,707	40.6

^aRate expressed as hospitalizations per 1,000 person-years of service^bRate of pregnancy and delivery-related hospitalizations among females only (in parentheses)

active component members increased in 2012 compared to the past decade, but decreased slightly compared to 2011. As in the past, in 2012, mental disorders, pregnancy and delivery-related conditions, and injuries and poisonings accounted for more than half of all hospitalizations of active component members. Since 2008, hospitalizations for mental disorders increased by more than 50 percent; during the same period, hospitalizations for injuries and poisonings slightly decreased.

The recent sharp increase in hospitalizations for mental disorders likely reflects the effects of many factors including repeated deployments and prolonged exposures to combat stresses; increased awareness and concern regarding threats to mental health among unit commanders and other front line supervisors, service members and their families, and medical care providers; increased screening for and detection of mental disorders after combat-related service and other traumatizing experiences; and decreasing stigmas and removal of barriers to seeking and receiving mental disorder diagnoses and care.

There are limitations to this summary that should be considered when interpreting the results. For example, the scope of this report is limited to members of the active components of the Services. Many reserve component members were hospitalized for illnesses and injuries while serving on active duty in 2012; these hospitalizations are not accounted for in this report. Also, many injury and poisoning-related hospitalizations occur in non-military hospitals; in most cases, the “external causes” of such injuries and poisonings are not reported on standardized records. If there are significant differences in the causes of injuries and poisonings that resulted in hospitalizations in U.S. military and non-military hospitals, the summary of external causes of injuries requiring hospital treatment reported here (**Table 4**) could be misleading. Also, this summary is based on primary (first-listed) discharge diagnoses only; in many hospitalized cases, there are multiple underlying conditions. For example, military members who are wounded in combat or injured in motor vehicle accidents may have multiple injuries and complex medical

and psychological complications. In such cases, only the first-listed discharge diagnosis would be accounted for in this report. Even with these and other limitations, this report provides useful and informative insights regarding the natures, rates, and distributions of the most serious illnesses and injuries that affect active component military members.

In 2012, adjustment reactions (including post-traumatic stress disorder), mood disorders, and intervertebral disc disorders were among the leading causes of hospitalizations of both male and female service members. In recent years, attention at the highest levels of the U.S. military and significant resources have been focused on detecting, diagnosing, and treating mental disorders – especially those related to long and repeated deployments and combat stresses. In addition, the findings of this and other surveillance reports suggest that military medical research, force health protection, and clinical practice efforts should focus on improving the prevention, treatment, and rehabilitation of back disorders among U.S. military members.

Ambulatory Visits Among Members of the Active Component, U.S. Armed Forces, 2012

This report documents frequencies, rates, trends, and characteristics of ambulatory health care visits of active component members of the U.S. Armed Forces during calendar year 2012. Ambulatory visits of U.S. service members in fixed military and non-military (reimbursed through the Military Health System) medical treatment facilities are documented with standardized, automated records. These records are routinely archived for health surveillance purposes in the Defense Medical Surveillance System, which is the source of data for this report. Ambulatory visits that are not routinely and completely documented with standardized electronic records (e.g., during deployments, field training exercises, at sea) are not included.

For this report, all records of ambulatory visits of active component members of the Army, Navy, Air Force, Marine Corps, and Coast Guard in 2012 were categorized according to the first three digits of the primary (first-listed) diagnosis code

(per International Classification of Diseases, 9th revision, clinical modifications [ICD-9-CM]).

Frequencies, rates, and trends:

During 2012, there were 20,452,769 reported ambulatory visits of active component service members. The crude annual rate (all causes) was 14,249 visits per 1,000 person-years (p-yrs); thus, on average, each service member had more than 14 ambulatory encounters during the year (Table 1). The rate of documented ambulatory visits in 2012 was 3.9 percent higher than in 2011 and 71.8 percent higher than in 2003 (Figure 1).

In 2012, approximately four of every nine (45.7%) ambulatory visits were for “other contact with health services” (Table 1). This category (indicated by “V-codes” of the ICD-9-CM) includes health care not related to a current illness or injury; such care includes counseling, immunizations, deployment-related health assessments,

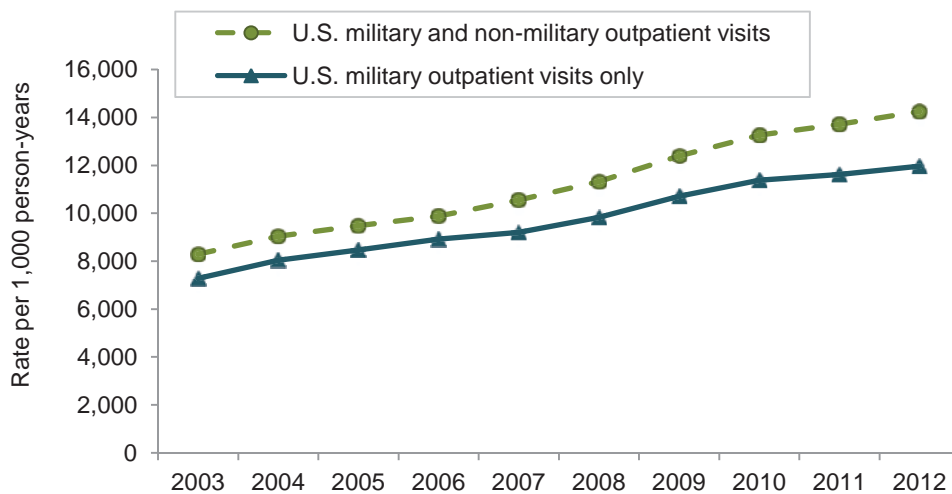
routine and special medical examinations (e.g., periodic, occupational, retirement) and therapeutic and rehabilitative treatments for previously diagnosed illnesses or injuries (e.g., physical therapy). In 2012, four “V-coded” diagnoses accounted for the majority of the visits in this category: general medical examination (including deployment health assessments) (31.7%), care involving use of rehabilitation procedures (15.9%), encounters for administrative purposes (8.7%), and special investigations and examinations (including vision, dental, and gynecological exams) (6.5%) (Tables 2, 3).

In 2012, there were 11,108,119 documented ambulatory visits for illnesses and injuries (ICD-9-CM: 001-999 (including relevant pregnancy V-codes)). The crude annual rate of illness- and injury-related visits was 7.7 visits per person per year (p-yr). The rate of ambulatory visits for illnesses and injuries in 2012 was 8.8 percent higher than in 2010 and 24.5 percent higher than in 2008 (Table 1).

TABLE 1. Ambulatory visits, ICD-9-CM diagnostic categories, active component, U.S. Armed Forces, 2008, 2010, and 2012

Major diagnostic category (ICD-9-CM)	2008			2010			2012		
	No.	No. per person	Rank	No.	No. per person	Rank	No.	No. per person	Rank
Other (V01-V82, except pregnancy-related)	7,259,145	5.12	(1)	8,964,907	6.15	(1)	9,344,650	6.51	(1)
Musculoskeletal system/connective tissue (710-739)	2,112,645	1.49	(2)	2,637,871	1.81	(2)	3,084,952	2.15	(2)
Mental disorders (290-319)	1,225,858	0.86	(3)	1,699,985	1.17	(3)	2,098,630	1.46	(3)
Signs, symptoms, and ill-defined conditions (780-799)	917,261	0.65	(5)	1,083,921	0.74	(4)	1,130,372	0.79	(4)
Nervous system (320-389)	770,662	0.54	(6)	962,961	0.66	(6)	1,036,846	0.72	(5)
Injury and poisoning (800-999)	1,008,237	0.71	(4)	1,045,294	0.72	(5)	961,578	0.67	(6)
Respiratory system (460-519)	751,155	0.53	(7)	738,900	0.51	(7)	639,117	0.45	(7)
Skin and subcutaneous tissue (680-709)	397,871	0.28	(8)	415,577	0.28	(8)	412,759	0.29	(8)
Pregnancy and delivery (630-679, relevant V-codes)	342,622	0.24	(9)	381,369	0.26	(9)	377,654	0.26	(9)
Genitourinary system (580-629)	269,774	0.19	(11)	300,734	0.21	(11)	299,076	0.21	(10)
Digestive system (520-579)	286,554	0.20	(10)	312,406	0.21	(10)	296,558	0.21	(11)
Infectious and parasitic diseases (001-139)	249,543	0.18	(12)	253,138	0.17	(12)	227,999	0.16	(12)
Circulatory system (390-459)	178,056	0.13	(13)	193,438	0.13	(13)	187,443	0.13	(13)
Endocrine, nutrition, immunity (240-279)	136,561	0.10	(14)	155,545	0.11	(14)	153,974	0.11	(14)
Neoplasms (140-239)	123,671	0.09	(15)	138,668	0.10	(15)	143,612	0.10	(15)
Hematologic disorders (280-289)	21,668	0.02	(17)	26,915	0.02	(17)	28,876	0.02	(16)
Congenital anomalies (740-759)	28,743	0.02	(16)	29,838	0.02	(16)	28,673	0.02	(17)
Total	16,080,026	11.33		19,341,467	13.26		20,452,769	14.25	

FIGURE 1. Rates of ambulatory visits by year, active component, U.S. Armed Forces, 2003-2012



Ambulatory visits, by diagnostic categories:

In 2012, three major diagnostic categories accounted for the majority (56.8%) of all illness- and injury-related ambulatory visits among active component service members: musculoskeletal system/connective tissue disorders (27.8%), mental disorders (18.9%), and “signs, symptoms and ill-defined conditions” (10.2%) (**Table 1**).

From 2008 to 2012, there were increases in numbers of visits in all major diagnostic categories except injury and poisoning, respiratory system, infectious and parasitic diseases, and congenital anomalies. The largest percentage increases from 2008 to 2012 were for mental disorders (change in ambulatory visits, 2008-12: +872,772; +71.2%), and musculoskeletal system/connective tissue disorders (change in ambulatory visits, 2008-12: +972,307; +46.0%) (**Table 1**).

Over the past five years, the relative distributions of ambulatory visits by diagnostic categories of the ICD-9-CM remained fairly stable with a few exceptions. In relation to visits attributable to each of the 17 major diagnostic categories, between 2008 and 2012, four categories increased in rank order: “signs, symptoms, and ill-defined conditions” (5th to 4th), nervous system (6th to 5th), genitourinary system (11th to 10th), and hematologic disorders (17th to 16th). Three categories decreased in rank

order: injury and poisoning (4th to 6th), digestive system (10th to 11th), and congenital anomalies (16th to 17th) (**Table 1**).

Ambulatory visits, by gender:

In 2012, males accounted for three-fourths (75.6%) of all illness- and injury-related visits; however, the annual crude rate among females (12.9 visits/p-yr) was 89 percent higher than that of males (6.9 visits/p-yr). Excluding pregnancy and delivery-related visits (which accounted for 13.9% of all non-V-coded ambulatory visits among females), the non-V-coded ambulatory visit rate among females was 11.1 visits/p-yr. As in the past, rates were higher among females than males for every illness- and injury-related category (**Figure 2**).

The same three illness- and injury-specific diagnoses (at the 3-digit level of the ICD-9-CM) accounted for the largest numbers of ambulatory visits among males and females (**Tables 2, 3**). For each of the most frequently reported illness- or injury-specific diagnoses, the crude rate was approximately 50 percent higher among females than males: other/unspecified disorders of joints (rates [per 1,000 p-yrs], female: 907.7; male: 598.0; female:male rate ratio [RR]: 1.52); adjustment reaction (rates, female: 764.4; male: 513.2; RR: 1.49); and other/unspecified disorders of the back (rates, female: 669.3; male: 467.9; RR: 1.43).

Anxiety disorders, general symptoms, and episodic mood disorders also ranked in the top 10 diagnoses for both males and females. Four mental disorders among males (adjustment reaction, alcohol dependence syndrome, anxiety disorders, and episodic mood disorders) and four among females (adjustment reaction, anxiety disorders, episodic mood disorders, and depressive disorder) were among the 10 most frequently reported illness- or injury-specific diagnoses during ambulatory encounters (**Tables 2, 3**). Of note, “organic sleep disorders” was the fourth most frequent illness- or injury-specific primary diagnosis during ambulatory visits of males (**Table 2**).

Across diagnostic categories, relationships between age and ambulatory visit rates were generally similar among males and females. For example, among both males and females, ambulatory visit rates for neoplasms and circulatory disorders among those 40 or older were more than 10 times the rates among those younger than 20 years old; in contrast, clinic visit rates for injuries and poisonings and infectious and parasitic diseases were generally lower among the oldest compared to younger service members. As in the past, clinic visit rates for genitourinary disorders were fairly stable across all age groups among females, but increased with age among males (**Figure 2**).

Dispositions after ambulatory visits:

Approximately 56.6 percent of all illness- and injury-related visits resulted in “duty without limitations” dispositions (**Figure 3**). Approximately one in 40 (2.6%) illness- and injury-related visits resulted in “convalescence in quarters” dispositions. The illness- and injury-related diagnostic categories with the highest proportions of “convalescence in quarters” or “limited duty” dispositions were injuries and poisonings (20.7%), diseases of the respiratory system (20.3%), diseases of the digestive system (18.7%), infectious and parasitic diseases (17.3%), and musculoskeletal system/connective tissue disorders (16.8%). Musculoskeletal system/connective tissue disorders (46.6%) accounted for nearly half of all “limited duty” dispositions, and injuries and poisonings (17.0%) and mental disorders (14.1%) accounted for an additional

FIGURE 2. Rates (per 1,000 p-yrs) of ambulatory visits by major diagnostic categories, by age and gender, active component, U.S. Armed Forces, 2012

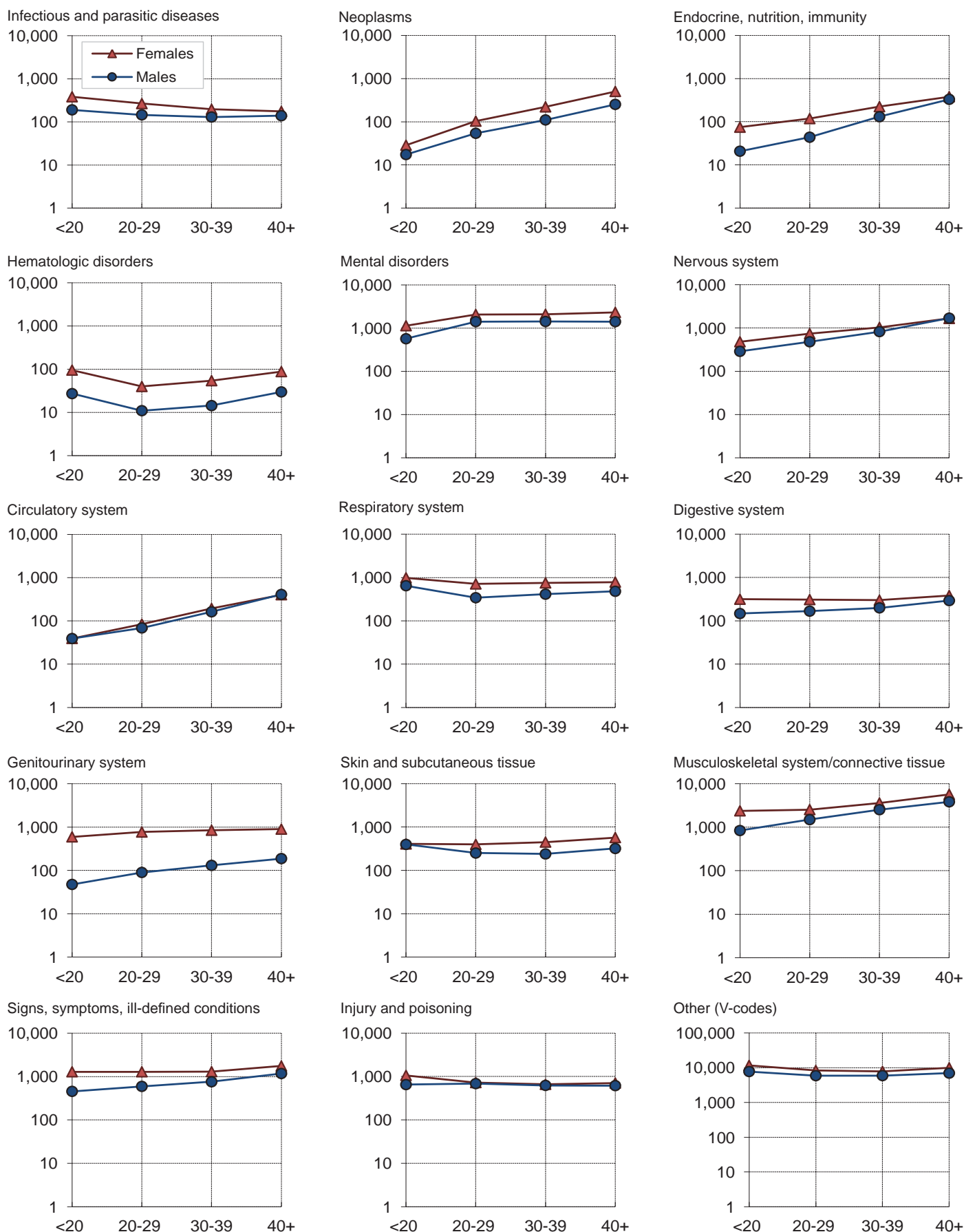


TABLE 2. Most frequent diagnoses during ambulatory visits by major diagnostic category, males, active component, U.S. Armed Forces, 2012

Diagnostic category (ICD-9-CM codes)	♂	No.	%	Diagnostic category (ICD-9-CM codes)	♂	No.	%
Infectious and parasitic diseases (001 - 139)		176,087		Digestive system (520 - 579)		230,963	
Other diseases due to viruses and chlamydiae ^a		38,769	22.0	Other/unspecified noninfectious gastroenteritis/colitis		53,343	23.1
Viral and chlamydial infection ^b		30,337	17.2	Diseases of esophagus		34,120	14.8
Dermatophytosis		28,028	15.9	Gastrointestinal hemorrhage		15,110	6.5
Intestinal infections due to other organisms		11,054	6.3	Inguinal hernia		13,790	6.0
Streptococcal sore throat and scarlet fever		10,365	5.9	Gastritis and duodenitis		12,337	5.3
Neoplasms (140 - 239)		109,032		Genitourinary system (580 - 629)		133,903	
Benign neoplasm of skin		17,547	16.1	Other disorders of male genital organs		27,145	20.3
Neoplasm of uncertain behavior		15,811	14.5	Calculus of kidney and ureter		22,316	16.7
Neoplasms of unspecified nature		11,182	10.3	Other disorders of urethra and urinary tract		14,377	10.7
Lipoma		9,706	8.9	Orchitis and epididymitis		9,770	7.3
Malignant neoplasm of testis		4,126	3.8	Male infertility		9,722	7.3
Endocrine, nutrition, immunity (240 - 279)		119,216		Skin and subcutaneous tissue (680 - 709)		323,234	
Disorders of lipid metabolism		32,528	27.3	Other cellulitis and abscess		54,958	17.0
Diabetes mellitus		18,757	15.7	Diseases of hair and hair follicles		50,382	15.6
Overweight, obesity and other hyperalimentation		14,719	12.3	Contact dermatitis and other eczema		46,160	14.3
Testicular dysfunction		13,544	11.4	Diseases of sebaceous glands		35,870	11.1
Acquired hypothyroidism		8,148	6.8	Other disorders of skin and subcutaneous tissue		17,317	5.4
Hematologic disorders (280 - 289)		18,147		Musculoskeletal system/connective tissue (710 - 739)		2,440,000	
Other and unspecified anemias		4,368	24.1	Other and unspecified disorders of joint		733,123	30.0
Hereditary hemolytic anemias		3,230	17.8	Other and unspecified disorders of back		573,679	23.5
Diseases of white blood cells		3,198	17.6	Intervertebral disc disorders		157,778	6.5
Purpura and other hemorrhagic conditions		2,288	12.6	Other disorders of soft tissues		151,480	6.2
Other diseases of blood and blood-forming organs		1,796	9.9	Peripheral enthesopathies and allied syndromes		150,000	6.1
Mental disorders (290 - 319)		1,673,436		Congenital anomalies (740 - 759)		21,671	
Adjustment reaction		629,171	37.6	Certain congenital musculoskeletal deformities		6,008	27.7
Alcohol dependence syndrome		222,193	13.3	Other congenital musculoskeletal anomalies		3,343	15.4
Anxiety, dissociative and somatoform disorders		211,060	12.6	Congenital anomalies of the integument		2,820	13.0
Episodic mood disorders		169,091	10.1	Other congenital anomalies of limbs		2,330	10.8
Nondependent abuse of drugs		136,227	8.1	Congenital anomalies of urinary system		1,128	5.2
Nervous system (320 - 389)		852,313		Signs, symptoms, ill-defined conditions (780 - 799)		851,085	
Organic sleep disorders		254,402	29.8	General symptoms		212,924	25.0
Disorders of refraction and accommodation		154,976	18.2	Symptoms involving respiratory system		161,417	19.0
Pain, not elsewhere classified		52,530	6.2	Other symptoms involving abdomen and pelvis		99,653	11.7
Hearing loss		45,623	5.4	Symptoms involving digestive system		75,761	8.9
Other headache syndromes		36,346	4.3	Symptoms involving head and neck		60,604	7.1
Circulatory system (390 - 459)		158,521		Injury and poisoning (800 - 999)		809,147	
Essential hypertension		66,100	41.7	Sprains and strains of ankle and foot		77,913	9.6
Hemorrhoids		18,665	11.8	Sprains and strains of knee and leg		74,999	9.3
Cardiac dysrhythmias		14,430	9.1	Sprains and strains of shoulder and upper arm		58,317	7.2
Varicose veins of other sites		5,483	3.5	Sprains and strains of other/ unspecified parts of back		51,130	6.3
Other venous embolism and thrombosis		4,512	2.8	Injury other and unspecified		50,994	6.3
Respiratory system (460 - 519)		482,888		Other (V01-V82, except pregnancy-related)		7,548,289	
Acute upper respiratory infections, unspecified sites		108,479	22.5	General medical examination		2,516,764	33.3
Allergic rhinitis		74,930	15.5	Care involving use of rehabilitation procedures		1,201,792	15.9
Acute pharyngitis		57,207	11.8	Encounters for administrative purposes		649,051	8.6
Chronic sinusitis		30,881	6.4	Special investigations and examinations		447,567	5.9
Asthma		28,642	5.9	Encounter for other/unspecified procedures and aftercare		351,425	4.7

^aICD-9-CM code 078 encompasses a broad variety of conditions including molluscum contagiosum, viral warts, sweating fever, cat-scratch disease, foot and mouth disease, cytomegaloviral disease, hemorrhagic nephrosonephritis, arenaviral hemorrhagic fever, and other disorders such as epidemic vomiting syndrome and Marburg disease.

^bICD-9-CM code 079 is for "viral and chlamydial infection in conditions classified elsewhere and of unspecified site" and is to be used to identify the viral or chlamydial agent in diseases classifiable elsewhere and to classify virus or chlamydial infection of unspecified nature or site.

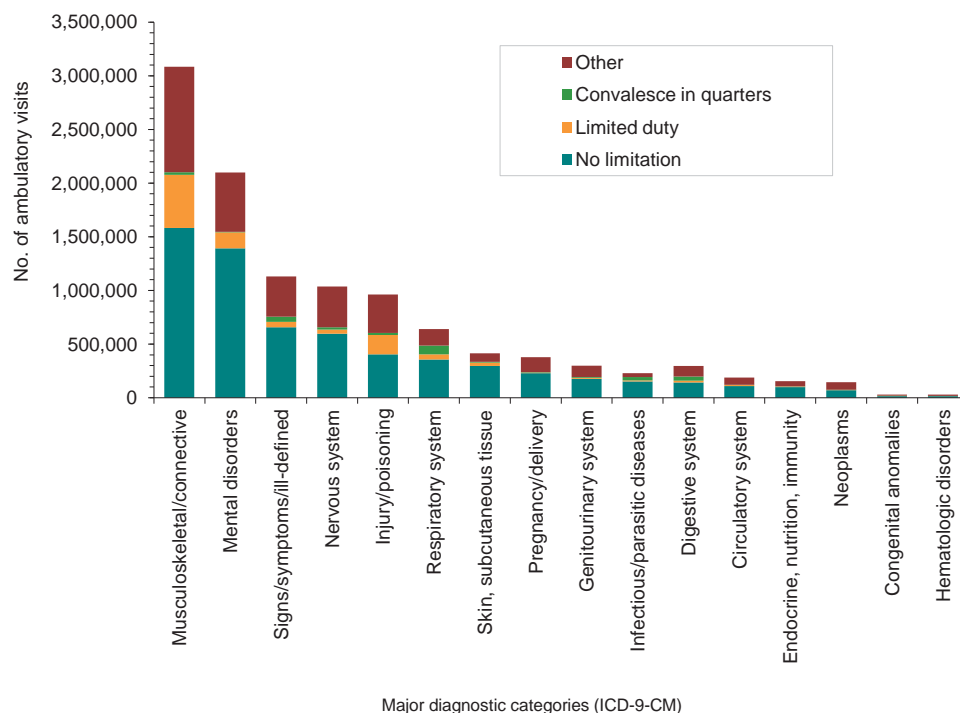
TABLE 3. Most frequent diagnoses during ambulatory visits by major diagnostic category, females, active component, U.S. Armed Forces, 2012

Diagnostic category (ICD-9-CM codes)	♀	No.	%	Diagnostic category (ICD-9-CM codes)	♀	No.	%
Infectious and parasitic diseases (001 - 139)		51,912		Digestive system (520 - 579)		65,595	
Viral and chlamydial infection ^a		12,229	23.6	Other/unspecified noninfectious gastroenteritis/colitis		17,648	26.9
Candidiasis		7,267	14.0	Functional digestive disorders not elsewhere classified		9,399	14.3
Other diseases due to viruses and chlamydiae ^b		5,863	11.3	Diseases of esophagus		6,988	10.7
Dermatophytosis		4,519	8.7	Gastritis and duodenitis		4,537	6.9
Herpes simplex		3,944	7.6	Gastrointestinal hemorrhage		2,969	4.5
Neoplasms (140 - 239)		34,580		Genitourinary system (580 - 629)		165,173	
Benign neoplasm of skin		5,333	15.4	Pain/other symptoms assoc w/ female genital organs		28,663	17.4
Uterine leiomyoma		4,661	13.5	Disorders of menstruation/other abnormal bleeding		23,243	14.1
Malignant neoplasm of female breast		4,410	12.8	Other disorders of urethra and urinary tract		20,680	12.5
Neoplasm of uncertain behavior		3,822	11.1	Inflammatory disease of cervix vagina and vulva		17,094	10.3
Neoplasms of unspecified nature		2,905	8.4	Female infertility		12,030	7.3
Endocrine, nutrition, immunity (240 - 279)		34,758		Pregnancy and delivery (630 - 679, relevant V-codes)		377,654	
Acquired hypothyroidism		6,485	18.7	Normal pregnancy		115,959	30.7
Overweight, obesity and other hyperalimentation		6,126	17.6	Other current conditions classifiable elsewhere		38,711	10.3
Ovarian dysfunction		2,986	8.6	Other complications of preg not elsewhere classified		38,554	10.2
Thyrotoxicosis with or without goiter		2,588	7.4	Postpartum care and examination		26,674	7.1
Disorders of fluid electrolyte and acid-base balance		2,502	7.2	Other indications for care/intervention related to labor		15,075	4.0
Hematologic disorders (280 - 289)		10,729		Skin and subcutaneous tissue (680 - 709)		89,525	
Other and unspecified anemias		4,011	37.4	Diseases of sebaceous glands		18,626	20.8
Iron deficiency anemias		2,841	26.5	Contact dermatitis and other eczema		13,356	14.9
Purpura and other hemorrhagic conditions		983	9.2	Other cellulitis and abscess		9,515	10.6
Hereditary hemolytic anemias		923	8.6	Diseases of hair and hair follicles		8,348	9.3
Diseases of white blood cells		897	8.4	Other disorders of skin and subcutaneous tissue		6,298	7.0
Mental disorders (290 - 319)		425,194		Musculoskeletal system/connective tissue (710 - 739)		644,952	
Adjustment reaction		160,029	37.6	Other and unspecified disorders of joint		190,038	29.5
Anxiety, dissociative and somatoform disorders		70,205	16.5	Other and unspecified disorders of back		140,124	21.7
Episodic mood disorders		70,021	16.5	Other disorders of soft tissues		52,821	8.2
Depressive disorder not elsewhere classified		40,753	9.6	Nonallopathic lesions not elsewhere classified		37,206	5.8
Alcohol dependence syndrome		26,976	6.3	Other disorders of cervical region		35,176	5.5
Nervous system (320 - 389)		184,533		Signs, symptoms, ill-defined conditions (780 - 799)		279,287	
Disorders of refraction and accommodation		39,500	21.4	Other symptoms involving abdomen and pelvis		52,718	18.9
Migraine		27,666	15.0	General symptoms		47,273	16.9
Organic sleep disorders		15,138	8.2	Symptoms involving respiratory system		40,198	14.4
Pain, not elsewhere classified		12,353	6.7	Symptoms involving digestive system		30,973	11.1
Other headache syndromes		10,444	5.7	Symptoms involving head and neck		23,702	8.5
Circulatory system (390 - 459)		28,922		Injury and poisoning (800 - 999)		152,431	
Essential hypertension		8,701	30.1	Sprains and strains of ankle and foot		17,502	11.5
Hemorrhoids		4,161	14.4	Sprains and strains of knee and leg		17,194	11.3
Cardiac dysrhythmias		3,063	10.6	Sprains and strains of other/unspecified parts of back		12,595	8.3
Varicose veins of lower extremities		2,284	7.9	Sprains and strains of shoulder and upper arm		8,316	5.5
Other disorders of circulatory system		1,171	4.0	Injury other and unspecified		7,942	5.2
Respiratory system (460 - 519)		156,229		Other (V01-V82, except pregnancy-related)		1,796,361	
Acute upper respiratory infections, unspecified sites		36,371	23.3	General medical examination		449,101	25.0
Allergic rhinitis		27,108	17.4	Care involving use of rehabilitation procedures		288,509	16.1
Acute pharyngitis		19,803	12.7	Special investigations and examinations		160,490	8.9
Chronic sinusitis		11,848	7.6	Encounters for administrative purposes		159,379	8.9
Asthma		10,963	7.0	Other persons seeking consultation		112,478	6.3

^aICD-9-CM code 079 is for "viral and chlamydial infection in conditions classified elsewhere and of unspecified site" and is to be used to identify the viral or chlamydial agent in diseases classifiable elsewhere and to classify virus or chlamydial infection of unspecified nature or site.

^bICD-9-CM code 078 encompasses a broad variety of conditions including molluscum contagiosum, viral warts, sweating fever, cat-scratch disease, foot and mouth disease, cytomegaloviral disease, hemorrhagic nephrosonephritis, arenaviral hemorrhagic fever, and other disorders such as epidemic vomiting syndrome and Marburg disease.

FIGURE 3. Ambulatory visits in relation to reported dispositions, by diagnostic category, active component, U.S. Armed Forces, 2012



third. Diseases of the respiratory system accounted for 27.7 percent of all “convalescence in quarters” dispositions – more than twice as many (n=80,237) as any other disease category (except “signs, symptoms, and ill-defined conditions” 15.9%) (Figure 3).

EDITORIAL COMMENT

In the past five years, the distribution of illness- and injury-related ambulatory visits in relation to their reported primary causes has remained fairly stable. Of note, however, from 2008 to 2012, the numbers of visits that were documented with diagnostic codes indicating mental disorders increased 71.2 percent. Thus, in 2012, mental disorders accounted for approximately 19 percent of all illness- and injury-related diagnoses reported on standardized records of ambulatory encounters.

Between 2008 and 2012, the relative ranking of injuries and poisonings as primary causes of ambulatory visits declined. However, the military operational impacts of various conditions cannot be assessed by numbers of attributable ambulatory visits alone. For example, in 2012 injuries and poisonings accounted for approximately one of every 21 ambulatory visits overall but one in 11 ambulatory visits with duty-limiting dispositions. Of particular note in relation to injuries and musculoskeletal conditions, in 2012 as in the past, joint and back injuries/back pain accounted for extraordinarily large numbers of ambulatory visits and lost duty time; resources should be focused on preventing, treating, and rehabilitating back pain/injuries among active component members.

The findings of this report should be interpreted with consideration of several limitations. For example, ambulatory care

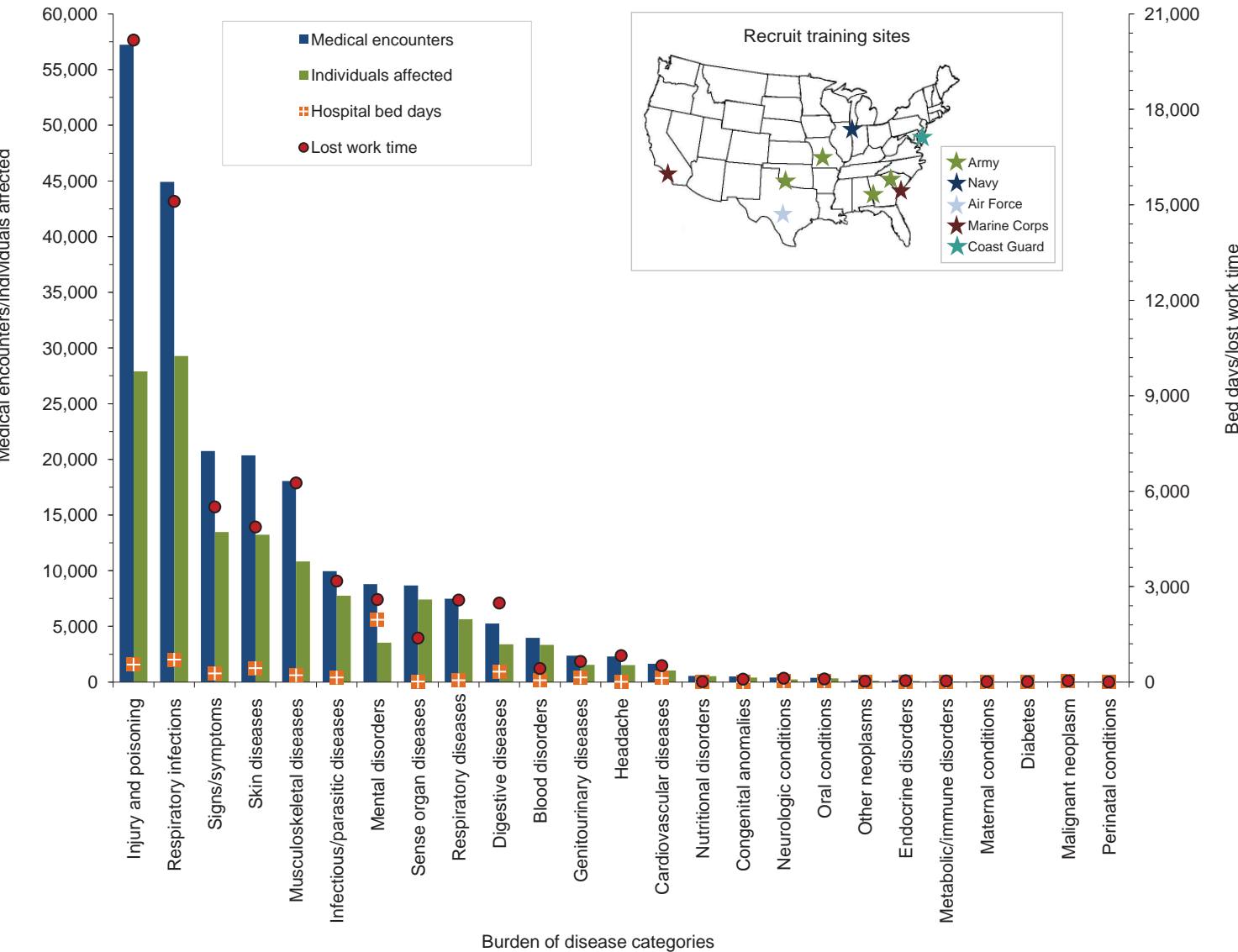
that is delivered by unit medics and at deployed (including in Afghanistan, Iraq, and at sea) medical treatment facilities may not be documented on standardized, automated records and thus not archived in the Defense Medical Surveillance System (the source of data for this report). In turn, this summary does not reflect the experience of active component military members overall to the extent that the natures and rates of illnesses and injuries vary among those who are deployed and not deployed.

Also, this summary is based on first-listed (primary) diagnosis codes reported on ambulatory visit records. As a result, the summary discounts morbidity related to comorbid and complicating conditions. Also, the accuracy of reported diagnoses likely varies across conditions, care providers, treatment facilities, and clinical settings. While specific diagnoses made during individual encounters may not be reliable, summaries of the frequencies, natures, and trends of ambulatory encounters among active component members are informative and potentially useful. For example, the relatively large and sharply increasing numbers of ambulatory visits for mental disorders in general, and the large numbers of visits for organic sleep disorders among males, reflect patterns of responses by the Military Health System to the effects of combat and deployment-related stresses on active component service members.

Lastly, it should be noted that this report documents all ambulatory health care visits but does not provide estimates of the incidence rates of the diagnoses described. Illnesses and injuries which necessitate multiple ambulatory visits for evaluation, treatment, and rehabilitation are over-represented in this summary of the ambulatory burden of health care, in contrast to common, self-limited, and minor illnesses and injuries that require very little, if any, continuing care.

Surveillance Snapshot: Illness and Injury Burdens Among U.S. Military Recruit Trainees, 2012

Medical encounters, individuals affected, hospital bed days, and lost work time^a by burden of disease category^b among recruit trainees,^c active component, U.S. Armed Forces, 2012



^aA measure of lost work time measured in days due to bed days, convalescence, and one-half day for each ambulatory visit that resulted in limited duty.
^bBurden of disease categories are the same as those used for analyses of morbidity burdens in the active components overall (see pages 4-9).
^cRecruit trainees are defined as active component members of the Army, Navy, Air Force, or Marine Corps with a rank of E1 to E4 who served at one of nine basic training locations (inset) during a service-specific training period following a first-ever personnel record.

Signs, Symptoms, and Ill-defined Conditions, Active Component, U.S. Armed Forces, 2000-2012

66 Signs, symptoms and ill-defined conditions” (SSIC) is a major diagnostic category of the International Classification of Diseases (ICD-9-CM) comprising approximately 190 diagnostic codes for “symptoms, signs, abnormal results of laboratory or other investigative procedures, and ill-defined conditions regarding which no diagnosis classifiable elsewhere is recorded”.¹ SSIC diagnoses may be provisional, pending further investigation or care, or they may be definitive in cases where a more precise explanatory diagnosis could not be determined.

In 2012, SSIC diagnoses (ICD-9-CM codes: 780-799) accounted for approximately 4,700 hospitalizations and more than one million ambulatory visits of U.S. service members.^{2,3} Each year, more U.S. service members receive medical care for “all other signs and symptoms” than for any other of the 139 specific condition categories summarized in the *MSMR*’s annual report of disease burdens.³

The purpose of this report is to characterize the general category of SSIC in terms of most frequent specific diagnoses at the fourth and fifth digit levels of the ICD-9-CM codes. To this end, this report summarizes numbers, proportions and trends of hospitalizations and ambulatory visits with primary (first-listed) diagnoses of specific SSIC diagnoses among U.S. service members.

METHODS

The surveillance population consisted of all active component service members who served at any time during January 2000 to December 2012. The endpoints of analysis were hospitalizations and ambulatory visits in military and non-military facilities with primary (first-listed) diagnoses of SSIC (ICD-9-CM: 780-799). For each 4-digit-level diagnostic code, only one hospitalization or ambulatory visit was counted per person per day. Numbers

of hospitalizations/ambulatory visits for a specific SSIC were divided by the number of all hospitalizations or ambulatory visits (for any condition) to obtain the proportion of encounters due to each specific SSIC diagnosis. All data were derived from the Defense Medical Surveillance System.

Diagnoses of 799.89 (“other ill-defined conditions”) reported by non-military outpatient facilities were excluded from analysis as such codes were used to indicate the filling and refilling of prescriptions during late 2009 to early 2011.

RESULTS

In 2012, there were 4,730 hospitalizations and 1,094,221 ambulatory visits with first-listed diagnoses of SSIC among active component service members (**Table 1**). Approximately one of every 20 medical encounters of service members in 2012 was attributable to SSIC; however this proportion

varied by age, gender and clinical setting. Among males 35 years and older nearly one of 10 (9.7%) hospitalizations was attributable to SSIC. Since 2004, SSIC hospitalizations as a proportion of all-cause hospitalizations have generally declined, while the proportions of all ambulatory visits related to SSIC have remained stable (**Figures 1a,b**).

Hospitalizations:

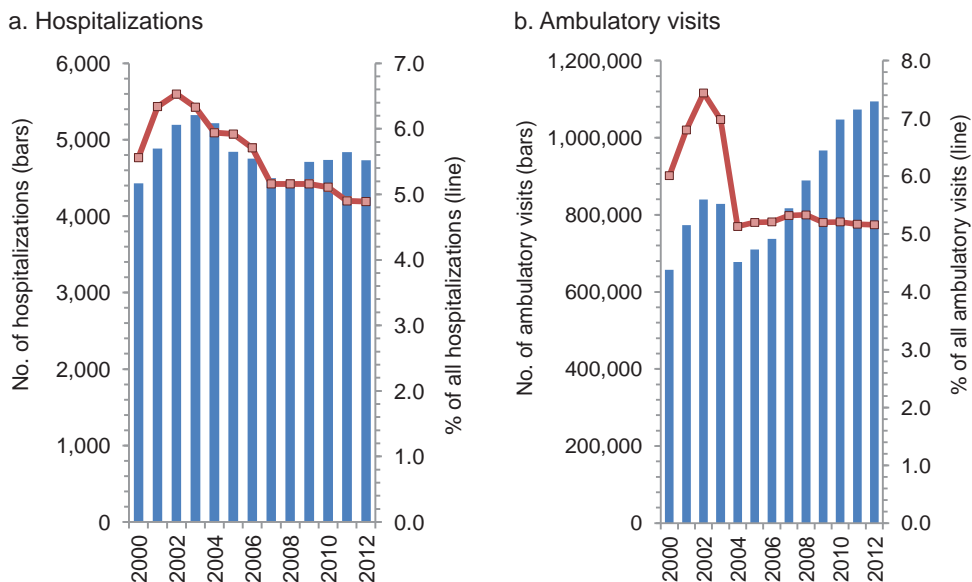
In 2012, three four-digit diagnoses accounted for 54 percent of all service member hospitalizations for SSIC: “Chest pain,” “abdominal pain,” and “syncope and collapse.” These three diagnoses accounted for 3.5 percent and 1.6 percent of all-cause hospitalizations among males and females, respectively. Nine of the 10 most frequent SSIC diagnoses during hospitalizations of males were the same as those for females (**Table 2a**).

Among males, chest pain was by far the most frequent cause of SSIC hospitalizations during 2012 (n=1,357 hospitalizations)

TABLE 1. Numbers and proportions (of all-cause hospitalizations/ambulatory visits) of medical encounters with primary (first-listed) diagnoses of “signs, symptoms, and ill-defined conditions” (ICD-9-CM: 780-799), by service and gender, active component, U.S. Armed Forces, 2012

	Hospitalizations		Ambulatory visits	
	No.	%	No.	%
Total	4,730	4.9	1,094,221	5.2
Service				
Army	2,678	5.4	520,622	5.0
Navy	769	4.7	177,464	5.0
Air Force	912	4.9	261,722	6.0
Marine Corps	326	3.3	104,115	4.5
Coast Guard	45	2.6	30,298	5.5
Gender				
Male	3,835	5.9	824,708	5.0
Female	895	2.8	269,513	5.8
Gender and age (in years)				
Male, 17-24	905	4.0	234,312	4.5
Male, 25-34	1,247	5.0	325,651	4.9
Male, 35+	1,683	9.7	264,745	5.7
Female, 17-24	288	2.3	104,484	6.0
Female 25-34	303	2.1	104,679	5.5
Female 35+	304	5.7	60,350	5.9

FIGURE 1. Numbers and proportions (of all-cause medical encounters) of medical encounters with primary diagnoses of “signs, symptoms, and ill-defined conditions” (ICD-9: 780-799), active component, U.S. Armed Forces, 2000-2012



(Table 2a) and in all years of the period. During 2000 to 2012, the proportions of all-cause hospitalizations among males attributable to “chest pain” ranged from 2.0 percent (in 2011) to 3.2 percent (in 2005) (data not shown). Among females, “abdominal pain” was the most frequent SSIC diagnosis during hospitalization in 2012 (n=211), followed by “chest pain” (n=196) (Table 2a). Among females, proportions of all-cause hospitalizations attributable to these two diagnoses were stable or declining during 2004 to 2012 (data not shown).

Bed days:

The top three SSIC diagnoses during hospitalization (“chest pain,” “abdominal pain” and “syncope and collapse”) accounted for 6,640 hospital bed days in 2012 (Figure 2). Approximately half of these bed days were for chest pain, though the mean length of hospitalization was shorter for chest pain (2.1 days) than for “abdominal pain” (3.2 days) or syncope and collapse (2.5 days).

Secondary diagnoses during hospitalizations:

The most frequent secondary (not first-listed) diagnoses were notably similar across each of the top three primary SSIC diagnoses during hospitalization. For each

of these three conditions, the top six secondary diagnoses among males included “nondependent tobacco use disorder,” “unspecified essential hypertension,” and “esophageal reflux.” These secondary diagnoses, along with “migraine” and “headache” were also frequent among females hospitalized with the top three SSIC diagnoses. Among males and females “anxiety state, unspecified” was within the 10 most frequent secondary diagnoses during hospitalizations for “chest pain” and “syncope and collapse” (data not shown).

Ambulatory visits:

In 2012, seven diagnoses accounted for the majority (51%) and 20 conditions for 80 percent of ambulatory visits for SSIC among active component members (Table 2b). Of the 10 most frequent SSIC diagnoses among ambulatory encounters among males and females combined (representing 60% of all SSIC encounters), eight of those were in the top 10 for females (Table 2b). These top 10 conditions for each gender accounted for 3.0 percent and 3.6 percent of all-cause ambulatory visits among males and females, respectively.

“Sleep disturbances” was the most frequent outpatient diagnosis for SSIC among males (n=101,803 ambulatory visits) and

the fifth most frequent among females (n=15,895), accounting for 10.8 percent of all SSIC-related ambulatory visits among active component service members. The vast majority of diagnoses of sleep disturbances were specific to “insomnia” among females and to “insomnia” and “sleep apnea unspecified” among males (data not shown). “Abdominal pain” and “chest pain” were the second and third most frequent SSIC diagnoses among males and the first and fourth most frequent among females. These two diagnoses accounted for 19.0 percent of all SSIC-related ambulatory visits in the active component. “Headache” (5.7% of all ambulatory visits) was responsible for more limited duty dispositions (including “quarters” and “limited duty”) than sleep disturbances, abdominal pain and chest pain combined (data not shown).

During 2000 to 2012, among male service members, the proportions of all-cause ambulatory visits attributable to specific SSIC diagnoses increased for “sleep disturbances,” “dyspnea and respiratory abnormalities,” and “other general symptoms” and decreased for “chest pain” and “rash and other nonspecific skin eruption” (Figure 4). Between 2008 and 2012, however, only the proportions of visits attributable to “other general symptoms” increased among males and proportions of other SSIC diagnoses remained relatively stable among both males and females (Figures 4, 5).

Proportions of ambulatory visits due to “headache” declined in both genders after 2005, when new diagnostic codes for headache (ICD-9-CM: 339) were added to the “diseases of the nervous system” category of the ICD-9-CM. A more than three-fold increase in the number of ambulatory visits attributable to “other general symptoms” during 2008-2012 was largely due to “memory loss” (ICD-9: 780.93), one of eight symptom codes listed in a 2008 Department of Defense guidance document on diagnostic coding of traumatic brain injury.

EDITORIAL COMMENT

The report documents that 3.5 percent of all hospitalizations of active component males resulted in discharge diagnoses of

TABLE 2A. 10 most frequent diagnoses during hospitalizations for “signs, symptoms, and ill-defined conditions” (ICD-9: 780-799 as a primary diagnosis) and proportions of all-causes hospitalizations, by gender, U.S. Armed Forces, 2012

4-digit ICD-9-CM	Description	♂ Male		4-digit ICD-9-CM	Description	♀ Female	
		No.	%			No.	%
7865	Chest pain	1,357	2.09	7890	Abdominal pain	211	0.66
7890	Abdominal pain	486	0.75	7865	Chest pain	196	0.62
7802	Syncope and collapse	399	0.62	7802	Syncope and collapse	88	0.28
7803	Convulsions	269	0.41	7803	Convulsions	70	0.22
7806	Fever and other physiologic disturbances of temperature regulation	119	0.18	7870	Nausea and vomiting	38	0.12
7840	Headache	111	0.17	7840	Headache	32	0.10
7860	Dyspnea and respiratory abnormalities	102	0.16	7809	Other general symptoms	25	0.08
7809	Other general symptoms	92	0.14	7820	Disturbance of skin sensation	24	0.08
7870	Nausea and vomiting	84	0.13	7860	Dyspnea and respiratory abnormalities	21	0.07
7805	Sleep disturbances	72	0.11	7806	Fever and other physiologic disturbances of temperature regulation	18	0.06

TABLE 2B. Twenty most frequent diagnoses during ambulatory visits for “signs, symptoms, and ill-defined conditions” (ICD-9: 780-799 as a primary diagnosis), and proportions of all-cause ambulatory visits, by gender, U.S. Armed Forces, 2012

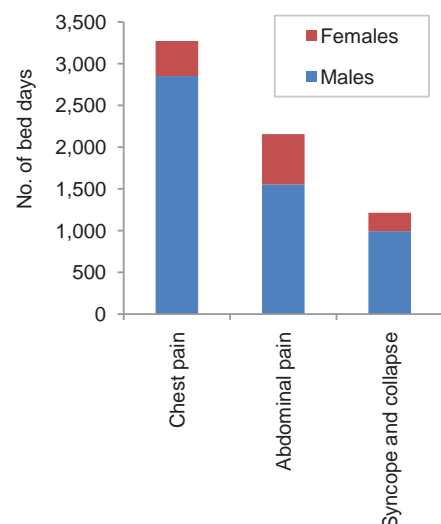
4-digit ICD-9-CM	Description	♂ Male		4-digit ICD-9-CM	Description	♀ Female	
		No.	%			No.	%
7805	Sleep disturbances	101,803	0.62	7890	Abdominal pain	43,356	0.93
7890	Abdominal pain	82,741	0.50	7870	Nausea and vomiting	20,178	0.43
7865	Chest pain	65,500	0.40	7840	Headache	19,709	0.42
7860	Dyspnea and respiratory abnormalities	56,610	0.34	7865	Chest pain	15,959	0.34
7840	Headache	43,176	0.26	7805	Sleep disturbances	15,895	0.34
7870	Nausea and vomiting	38,141	0.23	7950	Abnormal Papanicolaou smear of cervix and cervical HPV	15,804	0.34
7999	Other unknown and unspecified cause of morbidity or mortality	35,541	0.22	7860	Dyspnea and respiratory abnormalities	13,338	0.28
7809	Other general symptoms	30,796	0.19	7804	Dizziness and giddiness	8,139	0.17
7862	Cough	23,713	0.14	7862	Cough	7,389	0.16
7879	Other symptoms involving digestive system	23,411	0.14	7999	Other unknown and unspecified cause of morbidity or mortality	7,269	0.16
7804	Dizziness and giddiness	21,672	0.13	7802	Syncope and collapse	7,127	0.15
7820	Disturbance of skin sensation	17,400	0.11	7879	Other symptoms involving digestive system	6,923	0.15
7955	Nonspecific reaction to tuberculin skin test without active tuberculosis	17,155	0.10	7807	Malaise and fatigue	6,580	0.14
7802	Syncope and collapse	16,937	0.10	7820	Disturbance of skin sensation	6,333	0.14
7807	Malaise and fatigue	15,622	0.09	7851	Palpitations	5,707	0.12
7821	Rash and other nonspecific skin eruption	15,400	0.09	7821	Rash and other nonspecific skin eruption	5,111	0.11
7962	Elevated blood pressure reading without diagnosis of hypertension	15,231	0.09	7881	Dysuria	4,585	0.10
7851	Palpitations	15,210	0.09	7809	Other general symptoms	3,696	0.08
7822	Localized superficial swelling mass or lump	10,986	0.07	7883	Urinary incontinence	3,268	0.07
7806	Fever and other physiologic disturbances of temperature regulation	9,390	0.06	7955	Nonspecific reaction to tuberculin skin test without active tuberculosis	3,159	0.07

“chest pain,” “abdominal pain,” or “syncope and collapse” of unknown etiology. The finding is not surprising; the first two of these diagnoses were previously reported in the *MSMR* among the most frequent causes of emergency room

visits in the active component.⁴ In a relatively young and healthy population such as U.S. military members, most chest pain is non-cardiac in nature and likely caused by gastroesophageal or musculoskeletal disorders.⁵

Of the 1.1 million ambulatory visits due to SSIC annually, approximately 30 percent are due to abdominal pain, chest pain and sleep disturbances. Since 2005, sleep disturbances have been the number one cause of SSIC visits among male service

FIGURE 2. Bed days among active component service members hospitalized for "chest pain," "abdominal pain," and "syncope and collapse," U.S. Armed Forces, 2012



members. Striking increases in the incidence of sleep apnea and insomnia among military members in the decade leading up to 2010 have been previously described.^{6,7} During 2010 to 2012, numbers of outpatient visits with diagnoses of sleep disturbances increased approximately 12 percent. However, ambulatory visits for all causes increased nearly 6 percent during the same period.

Certain limitations apply to the use of all-cause medical encounters as denominators for proportions of encounters attributable to SSIC. In this analysis, proportions of ambulatory visits attributable to SSIC were calculated as a percent of all ambulatory visits among service members, including the 46 percent of visits for "other contact with health services" (V-codes). If the percent of SSIC visits had been expressed as a proportion of ambulatory visits for illnesses and injuries only (ICD-9-CM: 001-999), the attributable proportions would have been higher. Also, since the vast majority of hospitalizations of U.S. service women are related to labor and delivery, proportions of all hospitalizations attributable to SSIC were not comparable between genders.

Finally, in 2012, more service members received limited duty dispositions for "headache" (ICD-9-CM: 784.0) than for the top three most frequent diagnoses during

FIGURE 3A. Proportions of all-cause ambulatory visits attributable to ambulatory visits with primary diagnoses (ICD-9-CM, 4-digit level) of "signs, symptoms, and ill-defined conditions," active component males, 2000-2012

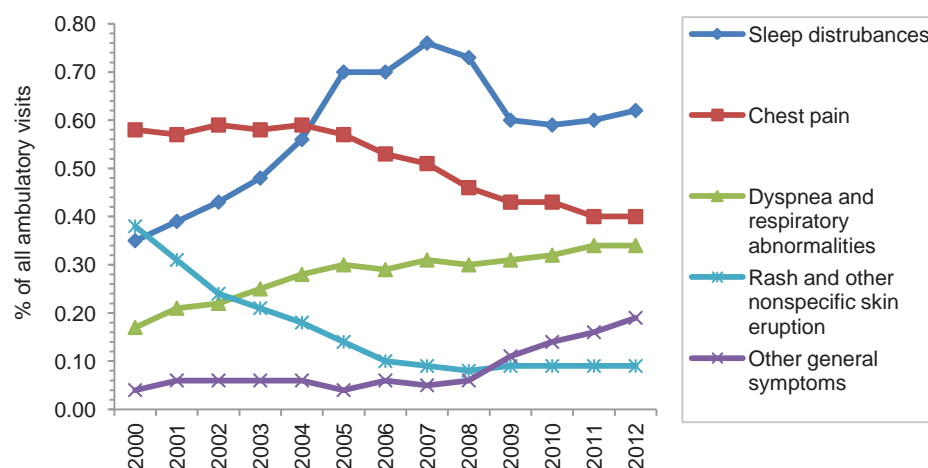
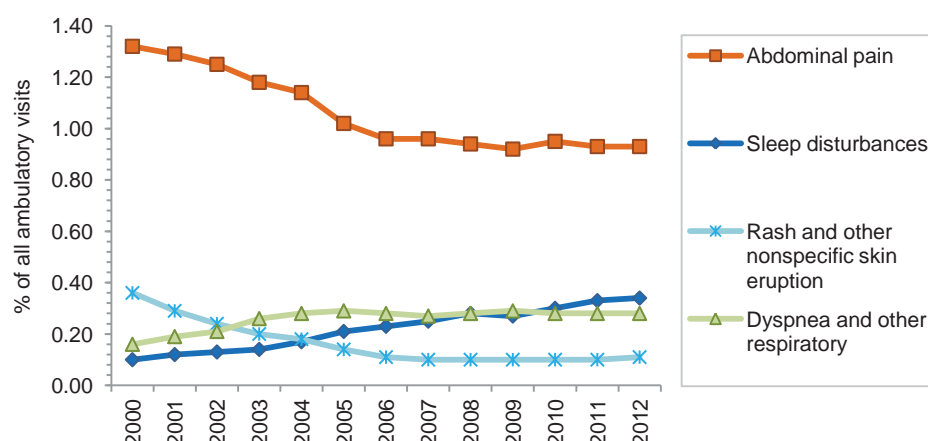


FIGURE 3B. Proportions of all-cause ambulatory visits attributable to ambulatory visits with primary diagnoses (ICD-9-CM, 4-digit level) of "signs, symptoms, and ill-defined conditions," active component females, 2000-2012



SSIC ambulatory visits combined. The finding illustrates the value of multiple morbidity measures for identifying conditions with the highest public health burdens.

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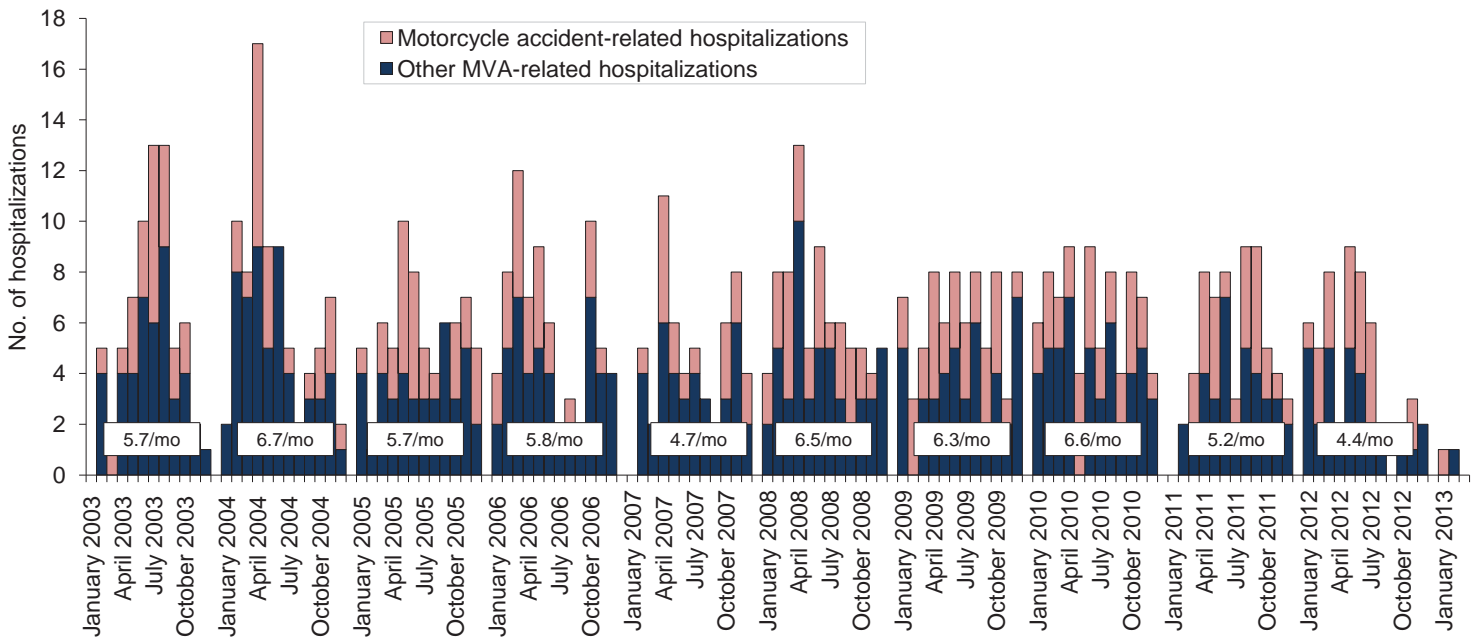
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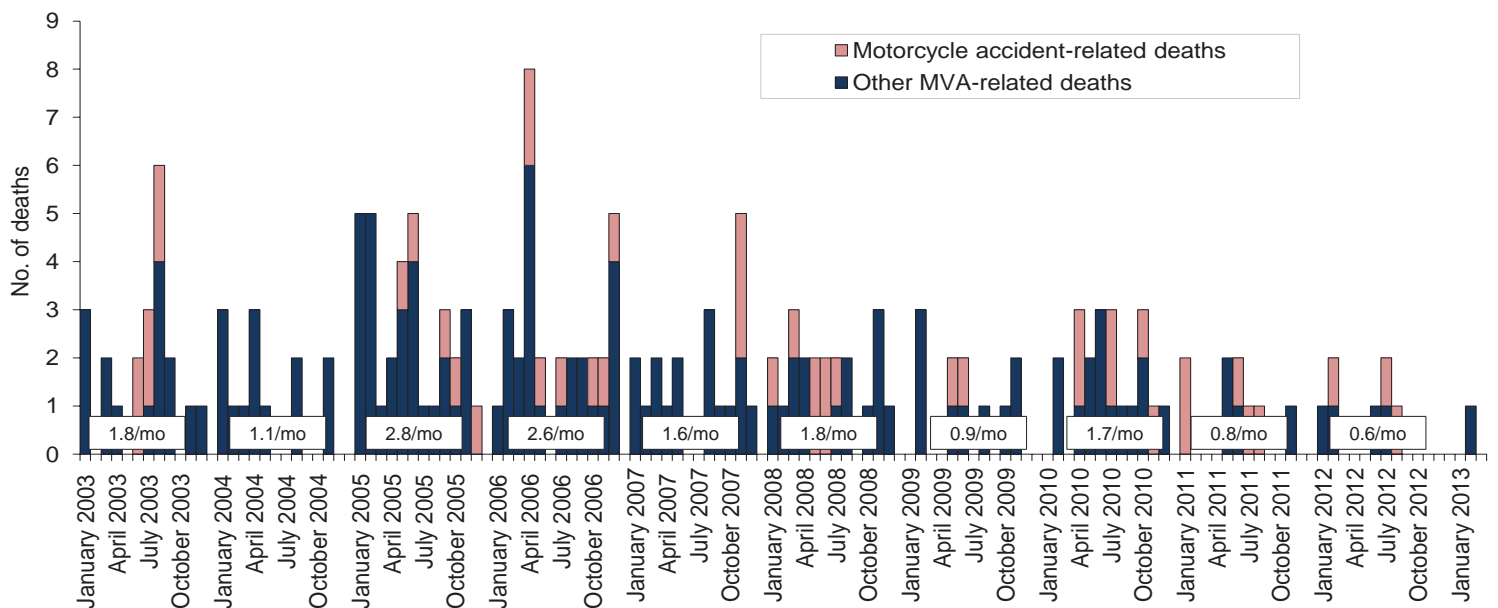
Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-March 2013 (data as of 15 April 2013)

Hospitalizations outside of the operational theater for motor vehicle accidents occurring in non-military vehicles (ICD-9-CM: E810-E825; NATO Standard Agreement 2050 (STANAG): 100-106, 107-109, 120-126, 127-129)



Note: Hospitalization (one per individual) while deployed to/within 90 days of returning from OEF/OIF/OND. Excludes accidents involving military-owned/special use motor vehicles. Excludes individuals medically evacuated from CENTCOM and/or hospitalized in Landstuhl, Germany within 10 days of another motor vehicle accident-related hospitalization.

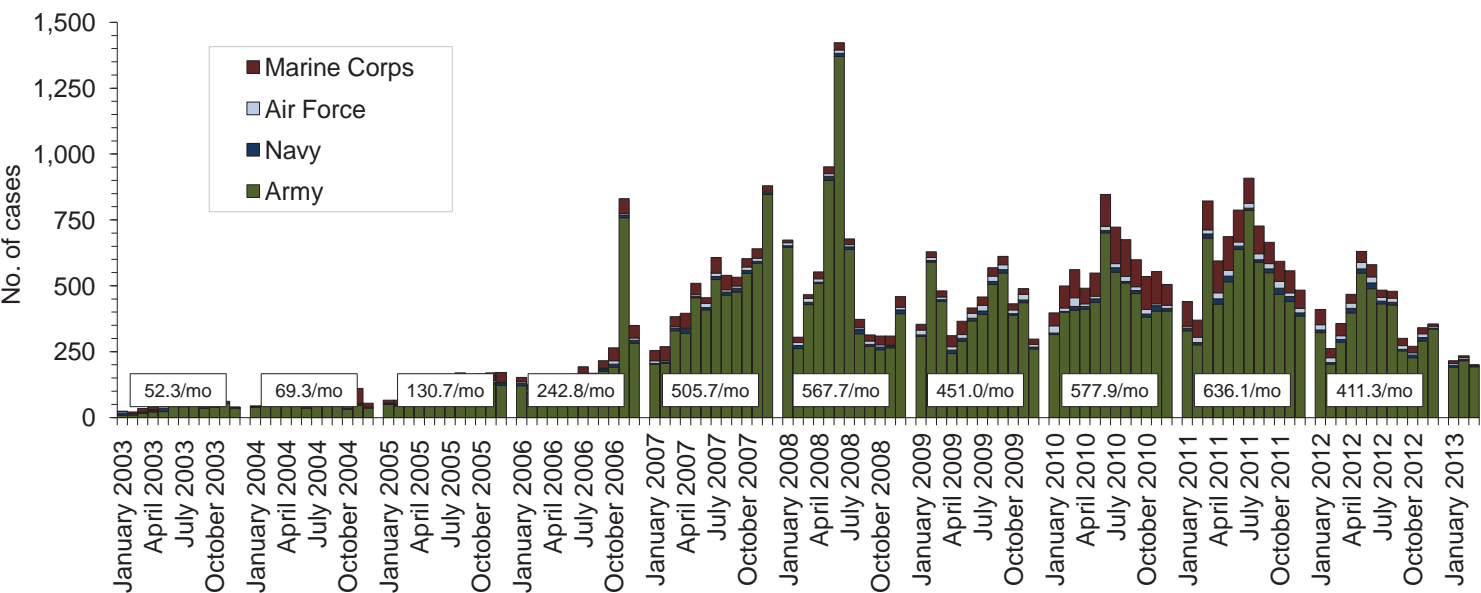
Deaths following motor vehicle accidents occurring in non-military vehicles and outside of the operational theater (per the DoD Medical Mortality Registry)



Reference: Armed Forces Health Surveillance Center. Motor vehicle-related deaths, U.S. Armed Forces, 2010. *Medical Surveillance Monthly Report (MSMR)*. Mar 11;17(3):2-6.
 Note: Death while deployed to/within 90 days of returning from OEF/OIF/OND. Excludes accidents involving military-owned/special use motor vehicles. Excludes individuals medically evacuated from CENTCOM and/or hospitalized in Landstuhl, Germany within 10 days prior to death.

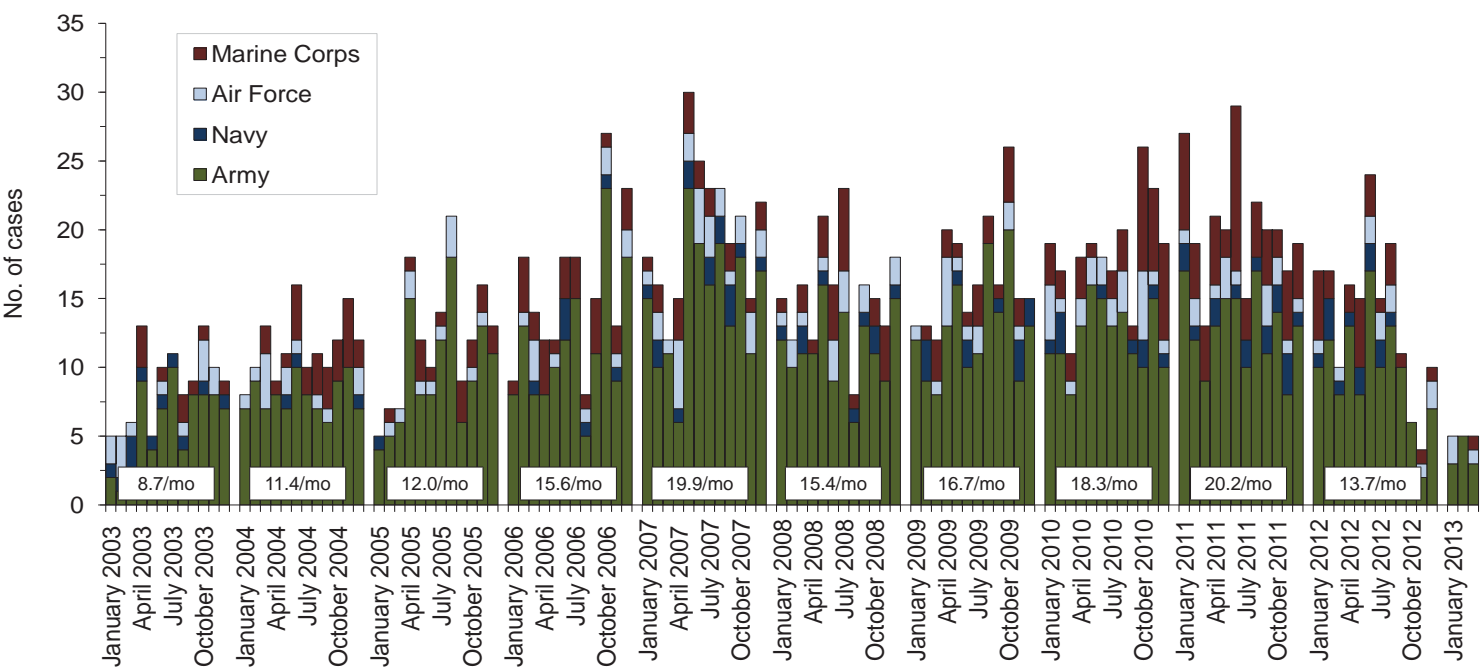
Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-March 2013 (data as of 17 April 2013)

Traumatic brain injury (ICD-9: 310.2, 800-801, 803-804, 850-854, 907.0, 950.1-950.3, 959.01, V15.5_1-9, V15.5_A-F, V15.52_0-9, V15.52_A-F, V15.59_1-9, V15.59_A-F)^a



Reference: Armed Forces Health Surveillance Center. Deriving case counts from medical encounter data: considerations when interpreting health surveillance reports. *MSMR*. Dec 2009; 16(12):2-8.
^aIndicator diagnosis (one per individual) during a hospitalization or ambulatory visit while deployed to/within 30 days of returning from OEF/OIF/OND. (Includes in-theater medical encounters from the Theater Medical Data Store [TMDS] and excludes 4,103 deployers who had at least one TBI-related medical encounter any time prior to OEF/OIF/OND).

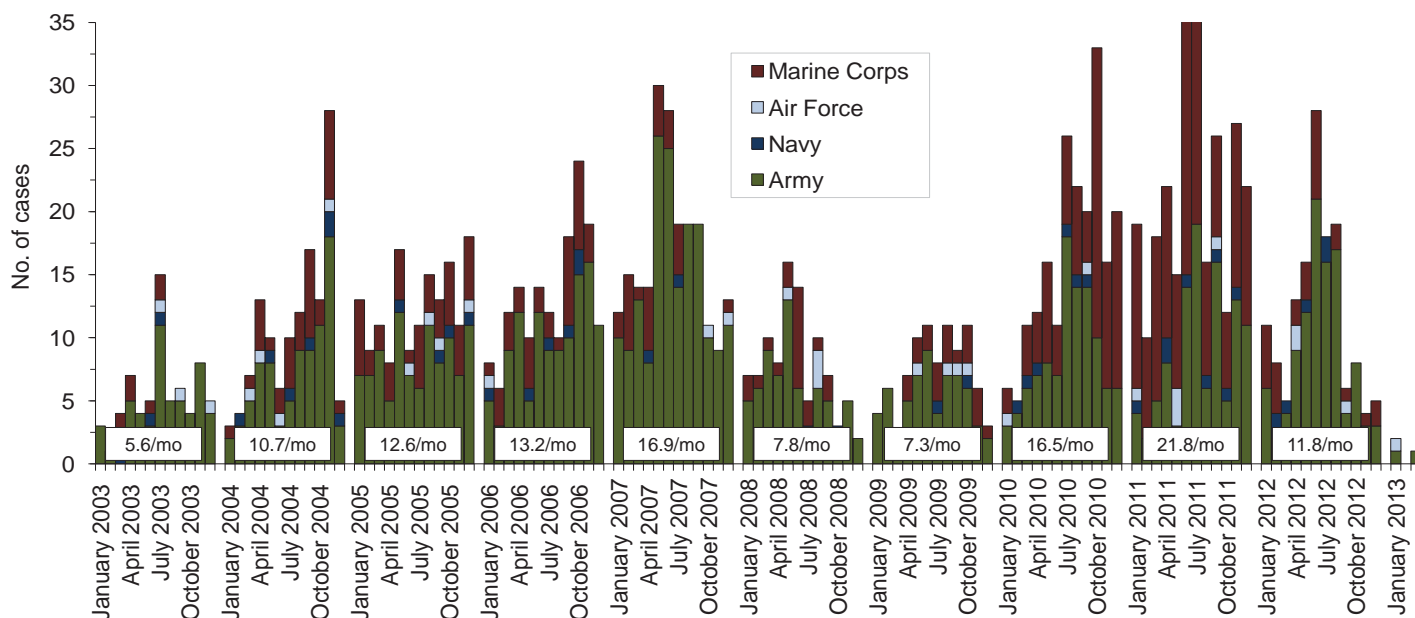
Deep vein thrombophlebitis/pulmonary embolus (ICD-9: 415.1, 451.1, 451.81, 451.83, 451.89, 453.2, 453.40 - 453.42 and 453.8)^b



Reference: Isenbarger DW, Atwood JE, Scott PT, et al. Venous thromboembolism among United States soldiers deployed to Southwest Asia. *Thromb Res*. 2006;117(4):379-83.
^bOne diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart (one case per individual) while deployed to/within 90 days of returning from OEF/OIF/OND.

Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-March 2013 (data as of 18 April 2013)

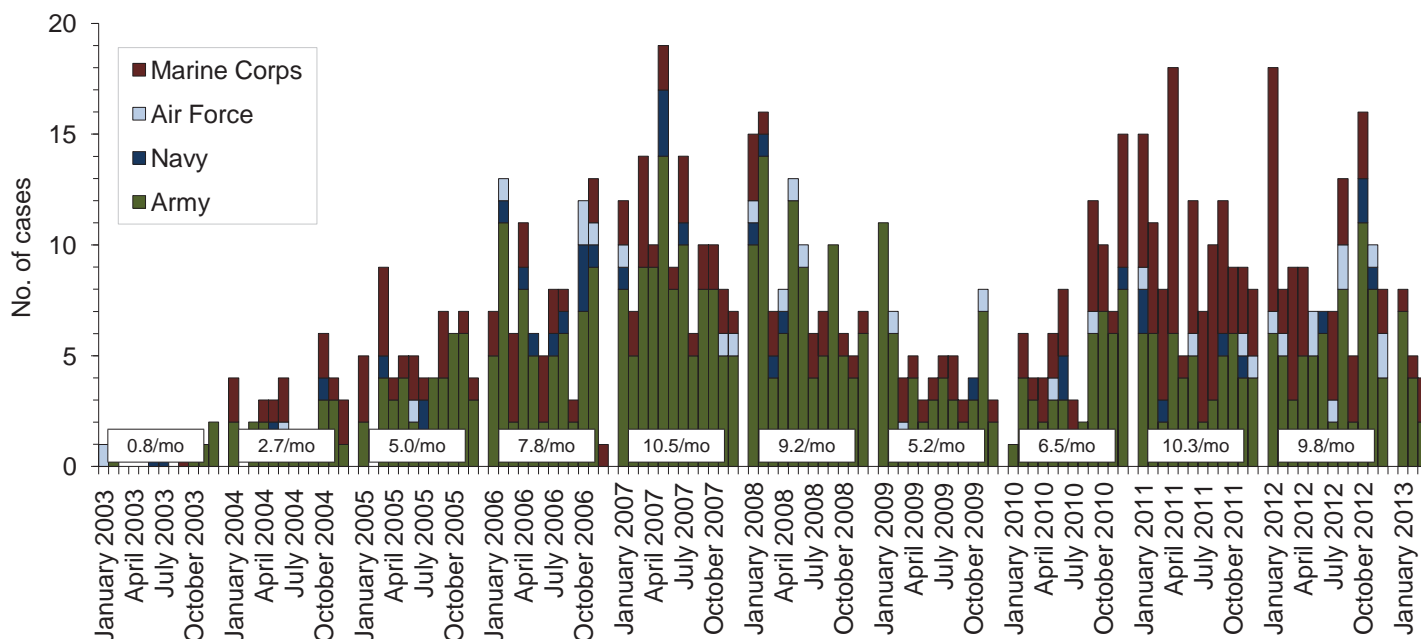
Amputations (ICD-9-CM: 887, 896, 897, V49.6 except V49.61-V49.62, V49.7 except V49.71-V49.72, PR 84.0-PR 84.1, except PR 84.01-PR 84.02 and PR 84.11)^a



Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: amputations. Amputations of lower and upper extremities, U.S. Armed Forces, 1990-2004. *MSMR*. Jan 2005;11(1):2-6.

^aIndicator diagnosis (one per individual) during a hospitalization while deployed to/within 365 days of returning from OEF/OIF/OND.

Heterotopic ossification (ICD-9: 728.12, 728.13, 728.19)^b



Reference: Army Medical Surveillance Activity. Heterotopic ossification, active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):7-9.

^bOne diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart (one case per individual) while deployed to/within 365 days of returning from OEF/OIF/OND.

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